Annex No. 3

External Evaluation Report of the Doctoral Study in the Domain of Chemistry at the Alexandru Ioan Cuza University, Iași

Contents

I. Introduction[1]

The external evaluation report of the doctoral study in the domain of Chemistry at the Alexandru Ioan Cuza University, Iași, was made by remote evaluation.

The composition of the Chemistry panel for the evaluation was as follows :

Coordinator: Prof. univ. dr. Ionel CIUCANU - Universitatea de Vest din Timișoara
International expert: Phd. José Miguel Martin-MARTINEZ -University of Alicante
PhD student: Bianca-Denisa CERNUȘCĂ - Universitatea de Vest din Timișoara

The evaluation corresponds to the doctoral school of Chemisty at the Alexandru Ioan Cuza University, Iași.

The Chemistry school in Iasi has its origins in 1860. In 1905, under the coordination of Petru Poni, Nicolae Costschescu presented the first doctoral thesis in sciences from Romania. In 1948, the Faculty of Chemistry was established at the “Alexandru Ioan Cuza” University of Iasi and under the coordination of relevant professors, the “Alexandru Ioan Cuza” University of Iasi were awarded multiple doctoral degrees in chemistry, physical-chemistry and related fields. In the 1968-1969 academic year, eight faculties including Mathematics-Mechanics, Physics, Chemistry, Biology-Geography, Law, Philology, History-Philosophy, and Economics existed at the “Alexandru Ioan Cuza” University of Iasi.

The Doctoral School of Chemistry operates within the Organizing Institution of Doctoral Studies at the “Alexandru Ioan Cuza” University of Iasi (IOSUD-UAIC). It acts as an independent organizational and administrative structure, based on the Decision no. 3 from 25.05.2017 of the “Alexandru Ioan Cuza” University of Iasi Senate. The Doctoral School of Chemistry of the “Alexandru Ioan Cuza” University of Iasi (IOSUD-UAIC) has in its structure a single Chemistry doctoral field which is managed by a council

[1] Each time when applicable the information shall be presented gender-wise.

and a director of the doctoral school. The academic community of the Doctoral School of Chemistry at IOSUD-UAIC is made up of teachers authorized to coordinate scientific doctorates, with permanent positions at UAIC, associated scientific personalities and PhD students enrolled in the Doctoral School of Chemistry. The Council of the Doctoral School of Chemistry is responsible for the organization and completion of the entire doctoral training activity in the doctoral Chemistry field and is composed by the following members :

Professor PhD habil. Cecilia Arsene, Doctoral School of Chemistry, IOSUD-UAIC
Professor PhD Aurel Pui, Doctoral School of Chemistry, IOSUD-UAIC
Professor PhD Ovidiu-Gabriel IANCU, scientific personality from other SDC
CSI PhD Mariana Pinteală, scientific personality from other SDC and IOSUD, and
PhD student Claudiu Roman as representative of PhD students.

The director of the Doctoral School of Chemistry is Professor PhD habil. Cecilia Arsene and is appointed for the time period 01.08.2017-31.07.2022.

The Doctoral School of Chemistry operates within the Faculty of Chemistry from the "Alexandru Ioan Cuza" University of Iasi. The Faculty of Chemistry Secretariat provides the support for ensuring a good organisation of the PhD students' programs, from admission to final public defense.

In 2017 the Doctoral School of Chemistry separated from the Doctoral School of Chemistry and Life and Earth Sciences, as a unit to operate independently within the Organizing Institution of Doctoral University Studies (IOSUD) at the "Alexandru Ioan Cuza" University of Iasi. The general objective of the Doctoral School of Chemistry is the consolidation of the university's position at national and International level, for quality in teaching and research activity. The main activities envisaged by the Doctoral School of Chemistry at IOSUD-UAIC involve the adequate use of human and research resources, innovation and development for the training of highly qualified human resources that meet the criteria of the level 8 qualification of the EQF (European Qualifications Framework) at successful completion of the third cycle of doctoral university studies in the field of Chemistry ; the continuous increase of the scientific, economic and social impact of the research of doctoral and postdoctoral internships by promoting excellence; and promote an interdisciplinary approach and continuous development of research infrastructure. The educational of the third cycle of doctoral university studies in Chemistry lasts for a period of 3 years, and include compulsory courses (including one in ethics issues), optional courses and a complementary training module. The PhD students enrolled in the training program in Chemistry must participate in weekly lectures related to courses and seminars given by PhD coordinators, and they can follow also courses offered by other doctoral schools.

Seven PhD coordinators in Chemistry field are registered at IOSUD-UAIC, they include permanent Professors and one retired academic.

Name and surname of the PhD coordinator	OM conferring the quality of PhD coordinator/habilitation	Full permanent staff	Doctoral school affiliation through	Affiliated
ARSENE Cecilia Prof. PhD habil.*	166/07.04.2014	UAIC	UAIC Senate Decision no. 5/26.06.2014	2014-present
BÎCU Elena Prof. PhD	1071/15.05.2007	UAIC	-	2007-present
BÎRSĂ Mihail-Lucian Prof. PhD habil.	4919/18.08.2015	UAIC	UAIC Senate Decision no. 5/24.09.2015	2015-present
DROCHIOIU Gabi Prof. PhD	1071/15.05.2007	UAIC	-	2007-present
MANGALAGIU Ionel	3573/19.04.2002	UAIC	-	2002-present

Prof. PhD				
OLARIU Romeo-Iulian Prof. PhD habil.*	3972/07.06.2016	UAIC	UAIC Senate Decision no. 9/30.06.2016	2016-present
PUI Aurel Prof. PhD	3656/10.04.2009	UAIC	-	2009-present

Note: * - PhD obtained abroad

The current situation of the 24 PhD students in Chemistry program is given below :

PhD advisor : Prof. PhD habil. Cecilia Arsene – 3 PhD students

Apostol I. Vlad, PhD 1st year, MEC grant

Iancu P. Cristina, PhD 1st year, MEC grant

Amarandei M. Cornelia, PhD 3rd year, MEC grant

PhD advisor : Prof. PhD Elena BÎCU – 2 PhD students

Zubaş M. Andreea, PhD 2nd year, MEC grant

Negru G. Georgiana, PhD 3rd year, MEC grant

PhD advisor : Prof. PhD habil. Mihail-Lucian BÎRSĂ – No PhD students

PhD advisor : Prof. PhD Gabi DROCHIOIU– 5 PhD students

Jitaru N. Ştefania-Claudia, PhD 1st year, MEC grant

Mihalcea V. Elena, PhD 1st year, MEC grant

Mocanu V. Cosmin-Ştefan, PhD 2nd year, UAIC grant

Jureschi Monica married Iavorschi, extension, 1st year (defended the PhD thesis on 21.10.2020)

Necula M. Radu, extension, 3rd year

PhD advisor : Prof. PhD Ionel MANGALAGIU – 7 PhD students

Ion L. Cristina-Smărăndiţa, PhD 2nd year, MEC grant

Brădăţan V. Liliana married Oniciuc, PhD 3rd year, extension of PhD studies, with fee

Cucu D. Dumitrela, extension, 1st year, (defended the PhD thesis on 12.02.2021)

Bratanovici E. Bogdan-Ionel, extension, 2nd year

Sardaru G.V. Monica-Cornelia, extension, 2nd year (defended the PhD thesis on 13.11.2020)

Chelariu A. Tudorel, extension, 3rd year

Bucur M. Ştefan, extension, 4th year

PhD advisor : Prof. PhD habil. Romeo-Iulian OLARIU – 4 PhD students

Măirean A. Ciprian-Paul, year II of PhD, MEC grant

Rusu M. Ana-Maria, year III of PhD, MEC grant - interruption of doctoral studies for 2 years starting with 01.10.2019 (PhD pause for 2 years, starting with 1.10.2019, according to the approval of the BECA no. D17/26.09.2019).

Şoroagă G.V. Laurenţiu-Valentin, extension, 1st year

Roman C. Claudiu, extension, 2nd year

PhD advisor : Prof. PhD Mircea-Nicolae PALAMARU (over 70 ani) – 1 PhD student

Arsene F.M. Elena Daniela married Chiţoiu-Arsene, extension, 4th year

PhD advisor : Prof. PhD Aurel PUI – 2 PhD students

Radu M. Ioana, PhD 1st year, MEC grant

Dănilă R.F. Raluca-Ştefania, PhD 2nd year, MEC grant

II. Methods used

The methods and tools used in the external evaluation process, before and during the remote evaluation were as follows :

- The analysis of the internal evaluation report of the doctoral study domain under review and its Annexes;
- Meeting/discussions with doctoral students in the doctoral study domain under review;
- Meeting/Discussions with the graduates of the doctoral study domain under review;
- Meeting/Discussions with employers of the graduates in the doctoral study domain under review;
- Meeting/Discussions with the school officials of the Doctoral School(s) in which the doctoral study domain under review is operating;
- Meeting/Discussions with the doctoral advisors in the doctoral study domain under review;
- Meeting/discussions with the representatives of the various structures of the IOSUD/Doctoral School(s) in which the doctoral study domain under review is operating:
- The Council of the Doctoral School, the Quality Assessment and Assurance Commission, the Ethics Commission (including with the student representatives of these structures);

III. Analysis of ARACIS's performance indicators

Domain A. INSTITUTIONAL CAPACITY

The Doctoral School of Chemistry demostrates an adequate institutional capacity, including the administrative, managerial institutional structures and financial resources, the regulations of the doctoral studies, the logistical resources necessary to carry out the doctoral studies, the existence of research or institutional/human resources development grants, the percentage of doctoral students active at the time of the evaluation, and the criteria for reimbursing professional training expenses of doctoral students. The different aspects have been extensively considered in the internal evaluation report and in the meetings/discussions with the different personnel involved.

Criterion A.1. The administrative, managerial institutional structures and the financial resources

The Doctoral School of Chemistry demostrates an adequate institutional capacity on the administrative, managerial institutional structures and financial resources, including the regulations of the doctoral studies. The performance indicators have been adequately fullfilled.

Standard A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.
The Doctoral School of Chemistry demostrates an adequate institutional capacity, including the the regulations of the doctoral studies. The performance indicators have been extensively considered in the internal evaluation report and in the meetings/discussions with the different personnel involved.

Performance Indicator A.1.1.1. *The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:*

(a) the internal regulations of the Doctoral School

1) The institutional sets of rules and regulations for the organization and functioning of the doctoral university studies of the "Alexandru Ioan Cuza" University of Iasi, for the period 2013-2020, are included in Annex-10, 10-T (with integrated items) of the Internal Evaluation Repor, and is available at http://www.uaic.ro/despre-uaic/documentele-universitatii/.
2) The set of rules and regulation for the organization and functioning of the doctoral university studies program within the Doctoral School of Chemistry, in force from 2018 until now, is presented in Annex-11 and is also available at https://www.chem.uaic.ro/ro/doctorat/regulament_doctorat.html
3) This set of rules is completed by the set of Rules and regulation of the Doctoral School in Chemistry and Life and Earth Sciences, approved in the CSUD meeting of 18.07.2013 (Annex-12).

(b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct.

Annex-61, 61-T (with integrated items) include the issues related to:

1) Methodologies for conducting elections at the level of CSUD, IOSUD-UAIC;
2) Evidences of the elections at the level of CSUD, IOSUD-UAIC;
3) The functioning of the Doctoral School of Chemistry within IOSUD-UAIC and Evidences for the conducting elections at the level of the Council of the Doctoral School of Chemistry from IOSUD-UAIC;
4) Methodologies for conducting the competition for the director of CSUD position at IOSUD-UAIC
5) Evidences of the competition for the director of CSUD position at IOSUD-UAIC.

c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies)

The methodologies for organizing and conducting doctoral studies (admission of PhD students, completion of doctoral studies), applicable to the Doctoral School of Chemistry at IOSUD-UAIC are given in page 54 of the internal evaluation report and the Annex-62, 62-T (with integrated items), and they include the methodologies for admission of doctoral students, the methodologies for completing doctoral studies, the postdoctoral research in the Doctoral School of Chemistry at IOSUD-UAIC, and the requirements for obtaining a certificate of habilitation. Specific evidences are provided at the following web pages :

https://www.chem.uaic.ro/ro/doctorat/admitere-doctorat-2020.html
https://www.chem.uaic.ro/ro/doctorat/admitere-doctorat-2019.html
https://www.chem.uaic.ro/ro/doctorat/admitere-doctorat-2018.html
https://www.chem.uaic.ro/ro/doctorat/admitere-doctorat2017.html
https://www.chem.uaic.ro/ro/doctorat/admiteredoctorat2016.html
https://www.chem.uaic.ro/ro/doctorat/admiteredoctorat2016.html

d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;

They are included in Annex-47, 47-T (with integrated items) of the internal evaluation report, nd they are complying with:

1) System procedure regarding the automatic recognition by the "Alexandru Ioan Cuza" University of Iasi of the quality of doctoral coordinator obtained in accredited university educational institutions from abroad, approved by the BECA Decision no. D10/02.02.2017;

2) System procedure regarding the recognition by the „Alexandru Ioan Cuza" University of Iasi of the diploma of doctor and of the doctoral degree in sciences or in a professional field obtained in university educational institutions accredited from abroad, approved by the BECA Decision no. D9/02.02.2017.

e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;

The information is given in Annex-13, Annex-14, 14-T, Annex-15, Annex-16, Annex-17, Annex-18 (also presented on page 3 of this Internal Assessment Report as well as in Annex-63 (with integrated items) of the internal evaluation report, and includes :

1) Documents attesting the existence of functional management structures based on the legislation in force;
2) CSUD meetings;
3) CSUD meetings of representatives and Directors of Doctoral Schools;
4) Meetings of the CSD representatives Doctoral School of Chemistry with issuance of CSD Decisions;
5) Activity between the members of the Doctoral School of Chemistry (SDC);
6) Interaction with PhD students from the Doctoral School of Chemistry;
7) Documents regulating the 3 MT competitions.

f) the contract for doctoral studies

The models of Doctoral University Study Contracts, approved by the BECA Decision, for the period 2013-2020 are given in Annex-64, 64-T (with integrated items) of the internal evaluation report, and they are available at https://www.chem.uaic.ro/ro/doctorat/formulare-doctorat.html

g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.

The Rules and regulation of organization and functioning of the doctoral university studies program within the Doctoral School of Chemistry, applicable from 2018 until now, are given in Annex-11 of the Internal Assessment Report. The document explains the regulations for the analysis and approval of proposals on the topics of the doctoral study programs, including the training program on advanced university studies (PPUA) and the scientific research program (PCS). PPUA is carried out based on the curriculum established by the Doctoral School Council, approved by CSUD and endorsed by the management of the "Alexandru Ioan Cuza" University of Iasi (Art. 28, paragraphs (1), (2) and (3)) and PCS is carries out on the basis of an individual scientific research plan elaborated by the PhD coordinator and approved by the CSD, under the guidance of the PhD coordinator, supported by a guidance commission approved by the CSD (Art. 30, 31, 32 with all the paragraphs).

Recommendations: The analysis of the documents provided demostrated that the different items are adequately fullfilled and in agreement with the university and governamental regulations. One aspect that needs attention is the low budgetary grants of the PhD contracts that is insufficient for cover the minimum living costs in Iasi. This situation forces the PhD students to find a second job which is detrimental for the development of the doctoral studies that are not defended in 3 years (tipycally 4-5 years). Alternatively, if the budgetary grants cannot be increased, the grants should be extended by one/two years more.

The indicator is fulfilled.

Performance Indicator A.1.1.2. *The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.*

The Rules and regulation of organization and functioning of the doctoral university studies program within the Doctoral School of Chemistry, applicable from 2018 until now, are given in Annex-11 of the Internal Assessment Report, in which the following aspects are considered :

1) The regulation of the doctoral school establishing the organization of the doctoral university study programs within the doctoral school – Art. 2, completed by Art. 21, Art. 22, Art. 23, Art. 24, Art. 25, Art. 26, Art. 27, Art. 28, Art. 29, Art. 30, Art. 31, Art. 32.

2) The doctoral school regulations are elaborated by the doctoral school council, by consulting all the PhD coordinators members of the respective school, in compliance with the institutional Regulation for organizing and conducting doctoral ustudy programs at IOSUD – Art. 3, supplemented by Art. 4.

3) The regulations of the doctoral school are endorsed by the universal, direct, secret and equal vote of the majority of the PhD coordinators members of the respective school – in the footer of the pages of the Regulation presented appear the mentions: Rules and regulations for the Doctoral School of Chemistry, IOSUD-UAIC Doctoral School of Chemistry of December 6, 2017, Approved by the Council of the Doctoral School of Chemistry on December 14, 2017, Approved by the Council of the Faculty of Chemistry on December 14, 2017.

4) The regulations of the doctoral school are approved by CSUD - Approval address no. 3889/07.03.2018 included Annex-11 (page 1).

5) The set of rules and regulations of the doctoral school establish mandatory criteria, procedures and standards aiming at least the following aspects:

- acceptance of new PhD coordinator members, as well as regulations regarding the way in which a PhD coordinator can be withdrawn as a member of the doctoral school - Art. 5, paragraphs (1) ÷ (5), Art. 6, paragraphs (1) ÷ (3), Art. 7, Art. 8. The evaluation of the PhD coordinators from the Doctoral School of Chemistry from IOSUD-UAIC, at internal level, is done in full agreement with the evaluation criteria established by the Ministry of National Education and Scientific Research. The evaluation mainly focuses on aspects related to the quality of the scientific results of the group led by the PhD coordinator, and the impact and relevance of its scientific activity at International level.
- the mechanisms through which decisions are taken regarding the opportunity, structure and content of the training program based on advanced university studies - Art. 9, Art. 10, Art. 11, Art. 29;
- the procedures for changing the PhD coordinator of PhD students and the procedures for mediating conflicts - Art. 6, paragraphs (4)÷(8);
- the conditions under which the doctoral program may be interrupted - Art. 26, paragraphs (1)÷(5);
- the modalities of fraud prevention in scientific research, including plagiarism - Art. 18, paragraphs (1)÷(6), Art. 19, Art. 20, paragraphs (1)÷(2), Art. 34, paragraph (5), Art. 42, paragraph (4), Art. 43, paragraph (2);
- ensuring access to research resources - Art. 16;

• attendance obligations of the PhD students, according to a methodology developed by the Ministry of Education, Research, Youth and Sports - Art. 13, paragraphs (1)÷(8), Art. 14, paragraphs (1)÷(3), Art 17, Art. 29, paragraph (5).

6) The regulation can also be applied in the case of doctoral university study programs carried out in co-supervision, if it has been decided as such by the partnership agreement – Art. 12.

Recommendations: The analysis of the documents provided demostrated that the different performance indicators are adequately fullfilled and in agreement with the university and governamental regulations.

The indicator is fulfilled.

Standard A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

The Doctoral School of Chemistry demostrates an adequate institutional capacity, including the the logistical IT and software resources necessary to carry out the doctoral studies. The performance indicators have been adequately fullfilled.

Performance Indicator A.1.2.1. *The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.*

Detailed information on the existence and effectiveness of an adequate computer software (eSIMS school management program) for the record of the PhD students and their academic background is giving in Annex-48, 48-T, Annex-65, 65-T of the Internal Assessment Report. General details about the eSIMS school management program, regarding the record of PhD students and their academic background, organization and functioning regulations and other specific information are provided in the Internal Assessment Report. The "Alexandru Ioan Cuza" University of Iasi implemented the rules and regulation on the organization, functioning and operationalization of the Unique Registration Electronic Archive of Romanian Universities (RMUR) for the record of the PhD students and their academic background. The RMUR system represents the electronic database in which all students are registered at all three university cycles (bachelor, master, doctorate) from all educational institutions in Romania. RMUR data management serves a number of purposes such as: visualization by the MEN of the educational background, approval/issuance of the number of study forms requested by universities, elaboration of funding methodologies, identification of double funding situations, data transmission to railway operators and subway, data transmission to the National Institute of Statistics, data transmission to public institutions empowered to maintain control and public order, processing for statistical and historical research purposes.

The University has appointed staff from the Faculties to participate in testing the functionality of the application generated by the Integrated Information System Project regarding the management of students' professional activities in the context of the transformations generated by the Bologna process, Decision BECA D12/08.02.2008. At the same time, the University aimed to adhere to the finalization protocol of the Integrated Information System Project on the management of students' professional activities in the context of the transformations generated by the Bologna process, completed in 2006. The "Alexandru Ioan Cuza" University of Iasi, through the Department of Statistics and Computerization has developed and implemented a new computer system called eSIMS that allows the following facilities for the PhD students :

- registration of personal data of PhD students;
- registration of information on admission, enrolment, schooling;
- the record of the marks obtained in the disciplines within the advanced university training program;
- records of the composition of the guidance committee;
- evidences of the research reports defending within the scientific research program;
- the data regarding the completion of the PhD university studies: the composition of the PhD committee, the date and place of the defence of the PhD thesis, the grade and the distinction awarded, the ministerial order regarding the PhD title awarded.

The program is accessed by the responsible persons within the secretariat on the basis of an account with username and password, and the security mesurements are provided by the Department of Statistics and Computerization.

Recommendations: The new computer system eSIMS school management program implanted by the "Alexandru Ioan Cuza" University of Iasi is an appropriate IT system to keep track of doctoral students and their academic background. Furthermore, the "Alexandru Ioan Cuza" University of Iasi implemented the rules and regulation on the organization, functioning and operationalization of the Unique Registration Electronic Archive of Romanian Universities (RMUR) for the record of the PhD students and their academic background. Adequate measurements are taken by the university for implanting the IT systems.

The indicator is fulfilled.

Performance Indicator A.1.2.2. *The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.*

The computer software used by the Doctoral School of Chemistry, to check for the similarity percentage in the PhD theses of the PhD students, are mainly two approved and implemented at IOSUD-UAIC level, although the IOSUD-UAIC has other typical procedures currently followed to verify each PhD thesis to identify the percentage of similarities.

Turnitin (LLC, California) software has been implemented because it allows educational institutions to verify student work to identify potential textual matches with their own resources available in Internet and its own data base. Ballistic Cell is a platform that offers the possibility to protect and promote academic integrity regarding the curriculum, and at the same time to implement a tool for detecting and preventing plagiarism (Contract between Ballistic Cell and "Alexandru Ioan Cuza" University of Iasi, no. 1584/26.10.2017). These platforms allows the Institution to protect and promote academic integrity and to implement tools for the detection and prevention of plagiarism.

Annex-66, 66-T (with integrated items) of the Internal Assessment Report presents the registration agreements for this platform for 2020 and 2019 (Registration Agreement no. 1600/29.10.2018, 1737/01.11.2019 and 1595/27.10.2020). Starting on 03.04.2021, the similarity reports for the PhD theses which will be defended within IOSUD-UAIC will be made at the doctoral schools, the Director of the doctoral school or a member of the Doctoral School Council will be the responsible.

Evidences of the use of the software tools in the PhD theses defended in the Doctoral School of Chemistry are given in Annex-52, 52-T of the Internal Assessment Report and they correspond to 17 of the 27 theses defended in the 20.12.2013-12.02.2021 period, which were checked for similarities because the anti-

plagiarism verification mandatory from June 2016, according to the specifications of the Office of Doctoral Studies-UAIC, sent by e-mail on June 28, 2016).

Recommendations: Turnitin software and Ballistic Cell platform have been implemented "Alexandru Ioan Cuza" University of Iasi to verify student work to identify potential textual matches and verify the percentage of similarity in all doctoral theses. 17 of the 27 theses in Chemistry defended in the 20.12.2013-12.02.2021 period were checked for similarities with good performance.

The indicator is fulfilled.

Standard A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

The Doctoral School of Chemistry demostrates an adequate institutional capacity, including the existence of research or institutional/human resources development grants, the percentage of doctoral students active at the time of the evaluation, and the criteria for reimbursing professional training expenses of doctoral students. The performance indicators have been adequately fullfilled.

Performance Indicator A.1.3.1. *Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.*

The Doctoral School of Chemistry of IOSUD-UAIC via the PhD coordinators make efforts to attract additional financial resources through research/institutional development/human resources grants won through competition. In the Doctoral School of Chemistry from IOSUD-UAIC are in progress a series of research/institutional development/human resources grants, attracted by the PhD coordinators in Chemistry, which aim at activities from the scientific research programs of the PhD students and in which PhD students from the Doctoral School of Chemistry from IOSUD-UAIC are involved. In the period 2015-2020, the PhD coordinators from the Doctoral School of Chemistry from IOSUD-UAIC obtained through national or International competition 16 projects (they are detailed in Annex-67, 67-T of the Internal Assessment Report) corresponding to 1 research infrastructure project for RD public institutions/universities, 2 projects with International funding and 13 projects with national funding.

The specific projects won by the PhD coordinators from the Doctoral School of Chemistry are detailed below :

Prof. PhD habil. Cecilia Arsene – 2 projects

1) MySMIS 127324 Project, Financing contract no. 322/04.09.2020, Research Center with Integrated Techniques for Atmospheric Aerosol Investigation in Romania, Acronym: RECENT-AIR, POC 2014-2020, Axis 1, "Research infrastructure projects for public RD institutions/universities", Action 1.1.1 Research infrastructures for universities, project for the development of research infrastructure in resorts and laboratories of the University, 89,570,958.10 RON, 36 months, Project coordinator : Prof. PhD habil. Cecilia Arsene.

2) PN-III-P4-ID-PCE-2016-0299, Financing contract no. 37/2017, "Assessing the Anthropogenic and Biogenic Emissions Impact on Atmospheric Urban Fine Organic Particles in Eastern Romania. Solving the Challenge of the Aerosols Missing Mass as a One Step Forward Tool", AI-FORECAST, UEFISCDI, Romania, 2017-2019, 850000 RON, Project coordinator : Prof. PhD habil. Cecilia Arsene.

Prof. PhD habil. Mihail Lucian BIRSA – 1 project

PN-III-P2-2.1-PED-2016-1817: 1,3-dithiolic flavonoids with antimicrobial properties, acronym DT-FLAV-PED, financing contract no. 152PED/03.01.2017, 2017-2018, 600000 RON, Project Coordinator Prof. PhD habil. Mihail Lucian Barsa.

Prof. PhD Gabi DROCHIOIU – 2 projects

1) PN-III-P4-ID-PCE-2016-0376, Financing contract no. 56/2017, http://meticonph.icmpp.ro/, Conformational changes of peptides in the presence of metal ions and antiamyloid compounds, dependent on time and pH, involved in neurodegenerative diseases, MeticonpH, UEFISCDI, Romania, 2017-2019, 850000 RON, Project Coordinator Prof. PhD Gabi Drochioiu.

2) PN-III-P2-2.1-PED-2016-0869; Contract 182PED from 23/08/2017, "New applications of zebras - poorly nutritious proteins from corn seeds", 2017-2019, € 103,000 (475,000.00 lei), Project Coordinator Prof. PhD Gabi Drochioiu.

Prof. PhD Ionel MANGALAGIU – 3 projects

1) PN-III-P4-ID-PCE-2020-0371, no. 115/2021, Development of a new generation of antimicrobial agents with azaheterocyclic hybrid skeleton by ecologically friendly methods, Financier: MEC-UEFISCDI, Duration: 2021-2023, Value: 1,200,000.00 lei, Project Director Prof. PhD Ionel Mangalagiu.

2) Grant CNFIS-FDI-2019-0129. "Research of Excellence in the Field of Antimicrobial Substances (Acronym: CED-Antim)". Funder: MEC-CNCSIS. Duration: 2019. Value: 352,000.00 lei, Project Director Prof. PhD Ionel Mangalagiu.

3) Grant CNFIS-FDI-2018-0102. Title: "Research of Excellence in Romania within the CERNESIM Center (Acronym: CER-CE)". Funder: MEC-CNCSIS. Duration: 2018 Value: 306,600.00 lei, Project Director Prof. PhD Ionel Mangalagiu.

Prof. PhD habil. Romeo Iulian OLARIU

1) H2020-INFRAIA-2020-1, (https://www.atmo-access.eu/atmospheric-simulation-chambers/) Grant Agreement-No. 10100800, ATMO-ACCESS - Solutions for Sustainable Access to Atmospheric Research Facilities, 2021-2025, 120000 EUR, Project Coordinator Prof. PhD habil. Romeo-Iulian Olariu.

2) Proiectul H2020-INFRAIA-2016-1, (https://www.eurochamp.org/simulation-chambers) Grant Agreement No. 730997, EUROCHAMP-2020, Integration of European Simulation Chambers for Investigating Atmospheric Processes - Towards 2020 and beyond, 2016-2021, 109000 EUR, Project Coordinator Prof. PhD habil. Romeo-Iulian Olariu.

3) PN-III-P4-ID-PCE-2016-0270, Financing contract no. 38/2017, https://sites.google.com/site/olfaroa, Ozonolysis as a Formation Route of Secondary Organic Aerosols. Laboratory Investigations on Environmental Reaction Chamber, OLFA-ROA, UEFISCDI, Romania, 2017-2019, 850000 RON, Project Coordinator Prof. PhD habil. Romeo-Iulian Olariu.

4) PN-III-P2-2.1-PED-2016-0924, Financing contract no. 78PED/2017, https://sites.google.com/site/devtrec2017/, Development and validation of a temperature regulated environmental chamber for studying atmospheric oxidation processes and mechanisms, DEV-TREC, UEFISCDI, Romania, 2017-2018, 600000 RON, Project Coordinator Prof. PhD habil. Romeo-Iulian Olariu.

Prof. PhD Aurel PUI – 4 projects

1) PN-III-P4-ID-PCE-2020-1385, Financing contract no. PCE 200/2021, „Innovative photocatalytic nanoreactors of core/mantle@blank@mantle type", 1.198.032,00 lei, Project Coordinator Prof. PhD Aurel Pui.
2) IUCN Project no. 39/theme (no) 04-4-1121-2015/2020, Dubna, Magnetic and magnetoresistive polymetallic nano-oxide: structure, magnetic and transport properties, Project Coordinator Prof. PhD Aurel Pui.
3) IUCN Project no. 76/theme (no) 04-4-1121-2015/2020, Dubna, Crystal lattice distortions induced by rare earths in spinel ferrites, Project Coordinator Prof. PhD Aurel Pui.
4) IUCN Project no. 54/2017, Dubna, Crystal lattice distortions induced by rare earths in spinel ferrites, Project Coordinator Prof. PhD Aurel Pui.

Recommendations: Even only 6 Ph advisors are active in the PhD program in Chemisty at "Alexandru Ioan Cuza" University of Iasi, during the evaluation period, 16 projects (1 research infrastructure project for RD public institutions/universities, 2 projects with International funding and 13 projects with national funding) were granted. The ratio is quite positive and complies with the performance indicator because to at least one research grant was obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the different Chemistry areas involved in the doctoral studies and they are engaging doctoral students.

The indicator is fulfilled.

Performance Indicator *A.1.3.2. *The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.*

The proportion of the PhD students existing at the evaluation time, who have benefited for at least six months from other sources of funding than government funding, are given in the following table :

Academic year	Number of MEC grants for Romanian PhD students in internships	Number of grants for Romanian ethnic PhD students, scholarship holders of the Romanian state	Number of UAIC grants for Romanian PhD students in internships	Number of institutional grants	TOTAL number
2020-2021	11	-	1	-	12
2019-2020	8	-	1	4**	13
2018-2019	11	-	1	-	12
2017-2018	12	-	2	-	14

2016-2017	15	1	1	-	17
2015-2016	10	1	-	8*	19

In the Doctoral School of Chemistry at IOSUD-UAIC, at the evaluation time, there are 21 PhD students with the following distribution: 12 PhD students in internship (5 in 1st year, 5 in 2nd year, 2 in 3rd year), 7 PhD students in extension years, 1 PhD student in extension with fee and 1 PhD student with interruption (maternity leave).
Out of the 21 PhD students of the Doctoral School of Chemistry, 9 PhD students were employed in projects granted by PhD coordinators. For the situation in which only the PhD students in the internship are taken into account, the percentage is 28.57 %, and for the situation in which the PhD students are in the extension years the percentage is 42.86 %.
Annex-68, 68-T of the Internal Assessment Report provides sufficient evidences of the initiation of procedures/mechanisms for the entrainment of financial resources other than those mentioned above.

Recommendations: The percentage of doctoral students active at the time of the evaluation of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi, who for at least six months receive additional funding sources besides government funding, is at least 28.57 % with fit well with the performance indicator than requieres not less than 20%. Out of the 21 PhD students of the Doctoral School of Chemistry, 9 PhD students were employed in projects granted by PhD coordinators.

The indicator is fulfilled.

Performance Indicator *A.1.3.3.[2] *At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).*
Annex-69, 69-T (with integrated items) of the Internal Assessment Report provides sufficient evidences of the use of at least 10 % of the total amount of doctoral grants in the doctoral school of Chemistry for the period 2018-2020.
In 2018, the Director of the Doctoral School took steps for the apportionment of 2500 RON/PhD student from the amount of the doctoral grant to purchase reagents, materials and spare parts necessary for the good conducting of the experimental research activities in laboratories. Moreover, the Director of CSUD from IOSUD-UAIC allocated 4000 RON/PhD student annual for specific professional training activities for the doctoral students. Furthermore, through the research projects won by PhD coordinators from the Doctoral School of Chemistry, the PhD students involved received financial support for participating in various professional training activities (participation in conferences, summer and winter schools, courses, internships abroad, publication of specialized articles or other specific forms of dissemination). The internal evaluation reports for the activity of SDC IOSUD-UAIC for the years 2020, 2019, 2018 and 2017

[2] The indicators marked with an asterisk (*) hold a special status, referring exclusively to the evaluation of doctoral studies domains, as per Article 12 from the annex No.1 of the Order of the minister of education No. 3651/12.04.2021 approving the Methodology for evaluating university doctoral studies and the system of criteria, standards and performance indicators used in the evaluation. In case they are not met, the Agency extends a period of maximum 3 years to IOSUD to correct the respective deficiencies.

(given in Annex-25, 25-T of the Internal Assessment Report) show the specific participation of the PhD students in diverse professional training activities.

In SDC from IOSUD-UAIC, for the academic years 2019-2020, 2018-2019 and 2017-2018, the PhD students prepared individual sheets with the reagents, materials, utensils and other consumables necessary for their research (up to the amount of 2500 RON for 2018, 4000 RON for 2019 and 4000 RON for 2020). Based on these sheets, Necessity and Opportunity Reports (RNO) were subnitted. A series of difficulties were encountered in the process of supplying the requested materials including non-bidding requested products within the established procedures, products that were purchased at much lower prices than those documented, delays in informing the beneficiaries about the occuring problems, etc. The previously mentioned problems have often led to a decrease in the amount allocated for the doctoral student. Annex-69, 69-T of the Internal Assessment Report presents evidences for approved RNOs, tax invoices and consumption/transfer vouchers generated for purchased products. After receiving the purchased products, they were submitted under signature (individual file, invoice, receipt) to the applicant PhD students.

For the proper management of the funds related to doctoral grants, SDC from IOSUD-UAIC holds different archived documents : 1) methodologies for allocating doctoral grants, normative documents that regulate the fees established in doctoral studies, 2) procedures for elaboration and approval of job descriptions for teaching and research activity, 3) documents regulating the activity from PPUA and PCS, 4) job descriptions, 5) the situation of the teaching activities in hourly payment regime, including daily activity sheets, 6) institutional regulations for the number of doctoral students, 7) documents/evidences of activities for the acquisition of materials/consumables, 8) electronic correspondence with various services (acquisitions, payroll), 9) documents attesting the possibility to access other sources of financing.

The situation of the accessed funds (as an average) for the internship PhD students is given in the following table :

No.	Name and surname of PhD student	Accessed		
		2020*	2019	2018
Doctoral grant value		25300 RON	25300 RON	25300 RON
10% doctoral grant		**2530 RON**	**2530 RON**	**2530 RON**
1	DANILA R.F. Raluca-Stefania	3384.72	-	-
2	ION L. Cristina-Smarandita	3381.43	-	-
3	MAIREAN A. Ciprian-Paul	2530.85	-	-
4	MOCANU V. Cosmin-Stefan	3652.38	-	-
5	ZUBAS M. Andreea	2849.26	-	-
6	AMARANDEI M. Cornelia	3449.29	2601.04	-
7	NEGRU G. Georgiana	2702.89	2777.14	-
8	BRADATAN V. Liliana (ONICIUC)	3898.93	2888.05	1559.25
9	CUCU D. Dumitrela	3323.79	3952.39	2275.52
10	CLOSCA O.V. Marius-Catalin	-	Excluded	2216.97
11	ILISEI V. Andana-Maria (MIHAI)	Excluded	1313.37**	1226.89
12	RUSU M. Ana-Maria	Interruption***	2989.8	2843.33
13	SOROAGĂ G.V. Laurentiu-Valentin	2480.22	3931.1	2997.78
14	BRATANOVICI Bogdan-Ionel	Extension year	2363.12	1954.38
15	GRIGORE Maria-Mirabela	Interruption	Interruption	2457.53
16	JURESCHI Monica (IAVORSCHI)	Graduate	3297.49	2119.39
17	LUPAESCU Ancuta-Veronica	Graduate	3244.92	1657.67
18	SARDARU Monica-Cornelia	Graduate	3653.93	1675.69
19	ROMAN CLAUDIU	Extension year	598.25	1938.18
20	CHELARIU Tudorel	Extension year	Extension year	2121.14
21	GALON Alina-Giorgiana (NEGRU)	Graduate	Extension year	2672.07

22	NECULA Radu	Extension year	Extension year	1500.59
	Total accessed (RON)	**31653.76**	**33610.60**	**31261.38**
	Average/student (RON)	**3165.38**	**2800.88**	**2084.92**
	% from doctoral grant	**12.51**	**11.07**	**8.23****

Note: * doctoral grant considered at the value of 2019; **student excluded after the inclusion of the individual file in the RNO; *** interruption for parental leave; **** year 2018 with the first attempts to clearly access some funds from doctoral grants.

It is worthy to mention that extensive administrative structure caused prolonged delays in the obtaining of the requested materials applied in the RNO sheets. For the benefit of the doctoral training, actions must be taken for reducing the time in getting the requested reactants/materials, one of them could be the creation of an stock of the necessary materials/consumibles needed by the PhD students in the corresponding research laboratories.

Recommendations: In general more than 10 % (11-13 % in 2019 and 2020) of the total amount of doctoral grants of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi were used to reimburse professional training expenses of doctoral students and the supplying of materials/consumibles for their doctoral thesis. Extensive administrative structure caused prolonged delays in the obtaining of the requested materials. For the benefit of the doctoral training, actions must be taken for reducing the time in getting the necessary reactants/materials for developing the doctoral work of the students, one of them could be the creation of an stock of the main materials/consumibles needed by the PhD students in the corresponding research laboratories.

The indicator is fulfilled.

Criterion A.2. Research infrastructure

The Doctoral School of Chemistry demostrates an adequate research infrastructure to support the conduct of doctoral studies' specific activities including the collaboration agreements with higher education institutions and the permanent renewal of research infrastructure. The performance indicators have been adequately fullfilled.

Standard A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

The Doctoral School of Chemistry demostrates an adequate research infrastructure to support the conduct of doctoral studies' specific activities. The performance indicators have been adequately fullfilled.

Performance Indicator A.2.1.1. *The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to International databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.*

The PhD students from the Doctoral School of Chemistry of IOSUD-UAIC carry out their activity in the research laboratories of the Faculty of Chemistry, the laboratories of the CERNESIM centre or in the laboratories from other Faculties heaving collaborations developed by the PhD coordinators.

The research infrastructure purchased after 2015 that can be accessed by PhD students of the Doctoral School of Chemistry, are detailed in the table below.

No.	Equipment
Biochemistry	
1.	Analytical Balance Vibra HT, Intell-Lab
2.	Electrophoresis gel analyzer (gel capture and analysis G: BOX F3 gel scanner, Syngene, Germany)
3.	**SDS – PAGE gel electrophoresis electrophoresis instrument (Mini-PROTEAN Tetra Cell from Bio-Rad, Germany)**
4.	Autoclave 760 Asal
5.	Centrifuge Hettich Mikro 22R (Tuttlingen,Germany)
6.	Circulating Baths, Raypa UNI-200
7.	**ModulusTM Multimode Microplate Reader (Turner Biosystem, USA) for 96-well microplates (operates at both fixed wavelengths 450, 560, 600, 750 nm) and in fluorescence mode**
8.	**HPLC liquid chromatograph**
9.	Gel Imaging System G: Box F3, Syngene
10.	**IKA ® KS4000 IC (Artisan Scientific) horizontal orbital incubator for cell cultures**
11.	**Deionized water system (18.2 M·cm) from a Milli-Q system (Millipore, Bedford, MA)**
12.	**Mini-PROTEAN Electrophoresis System Tetra Cell 4 gels, 1 mm with PowerPac Basic**
13.	pH meter (pH 211 Microproc. Hanna Instr.)
14.	pH meter (HI991002 si PH211) Hanna Instruments
15.	Biochrom Libra S35 PC UV-visible spectrophotometer, Cambridge, England
16.	SFM-25 KONTRON spectrofluorimeter
17.	LIBRA S35 PC single beam spectrophotometer (with Peltier thermostat, Biochrom, UK)
18.	Termomixer (Compact Eppendorf AG 22331 Hamburg), Thermomixer Compact with 1.5 mL block, AC input 115 V, Eppendorf
19.	Ultrasonic bath Selecta Ultrasons
20.	Ultrasonic Homogenizer - model CV18
21.	Vortex mixers SA8, Stuart
Inorganic chemistry	
22.	Magnetic stirrers with heating
23.	Ultrasound baths
24.	Analytical balances
25.	Calcining furnaces
26.	Ovens
27.	Rotavapor
28.	Jasco 660 plus FT IR spectrophotometer
29.	Cintra 101 Spectrophotometer (190-1100 nm)
Organic Chemisty	
30.	**Microwave reactor, PN-III-P4-ID-PCE-2020-0371, Invoice N00061 from 21.04.2021, 29,750.00 RON with VAT**
31.	**Rotavapor, PN-III-P4-ID-PCE-2020-0371, Factura 9900076 din 04/03/2021, 21,610.40 RON with VAT**
32.	**Vacuum pump system, PN-III-P4-ID-PCE-2020-0371, Invoice Isvad190 from 21/04/2021, 18,195.00**
33.	**UPS, PN-III-P4-ID-PCE-2020-0371, Invoice 210404460 from 08/04/2021, 2,534.00**
34.	Ovens, photochemical lamps, heated stirrers, etc
35.	ALPHA 1-2 LD Plus lyophilizer
36.	Photochemical reactor
37.	Gas chromatograph Mass spectrometer SHIMADZU QP
38.	FTIR 8400s/IR-Prestige – 21 – Spectrophotometer, Shimandzu
39.	Spectrometer- UV-VIS V-1800 Shimadzu
40.	Microwave and ultrasound reactors
41.	Bruker Tensor 27 FTIR Spectrometer
42.	Varian Carry 100Bio UV-Visible Spectrophotometer
CERNESIM - „Alexandru Ioan Cuza" University of Iasi http://cernesim.uaic.ro/index.php/ro/ http://erris.gov.ro/cernesim.uaic.ro	
43.	**Upgrade to the Supernova E Dual PL 12140085 diffraction system to allow the analysis of samples at temperatures of 80-400K, Research contract no. 34PFE/19/10.2018, AMS, 399,754.32 lei with VAT**

44.	**DOUBLE CONVERSION UPS 200kVA, Research contract no. 34PFE/19.10.2018, Invoice PSS 814403 from 31.10.2019, 164,009.37 lei with VAT**
45.	**OCEAN UV-NIR module (Upgrading of the SUNSET OC/EC analyzer within the CERNESIM Laboratory, including the acquisition of the UV-NIR spectrometric module for the OC/EC Sunset Lab analyzer), PN-III-P4-ID-PCE-2016-0270, Research Contract no. 33 /2017, ISVDO Invoice 568 of 10.11.2017, 115,430.00 lei with VAT**
46.	**Solid sample preparation and reading module for VCD-FTIR Spectrometer, CHIRALIR2XTM, BioTools, UK-USA Technology, USA, PN-III-P2-2.1-PED-2016-0924 Research contract no. 78PED/03.01.2017, ISVDO 565 Invoice from 20.10.2017, 26,899.95 lei with WATT**
47.	**2 Laptops DELL Latitude 5480, PN-III-P2-2.1-PED-2016-0924 Research contract no. 78PED/03.01.2017, Invoice ROWH 189903436541 from 21.11.2017, 19,906.50 RON with TVA**
48.	**Light Scattering aerosol monitor and the interface to the Aerosol Chemical Analysis Spectrometer, HR-ToF-AMS, PN-III-P4-ID-PCE-2016-0299, Financing Agreement no. 37/2017, AI-FORECAST, Invoice LBT-7365 of 27/11/2017, 210,630.00 RON with VAT**
49.	Total carbon and nitrogen analyzer, Multi N/C 3100 Analytik Jena
50.	Organic carbon and elemental carbon analyzer, SUNSET Laboratory
51.	Analytical balance, Sartorius CPA 26P-OCE (6 digits balance)
52.	Microanalytical balance, Sartorius MSU 2 7S (7 digits balance)
53.	Centrifuge, Hettich Zentrifugen Universal 320R
54.	Chromatograph with flame ionization detector and thermal desorption GC-FID-MS (Turbo) -TDSG-TDSA, GC System 7890A coupled with mass spectrometer 240 Ion trap GC/MS Agilent Technologies and thermal desorption system TDS-G Gerstel
55.	GCxGC chromatograph with mass detector and FID, GC System 7890A two-dimensional chromatographic coupled with MS 5975C inert XL EI/CI MSD with triple Axis detector
56.	Ion chromatograph, Dionex, ICS 5000 model, dual channel, conductivity
57.	Liquid chromatograph with mass detector, LC 1260 Infinity coupled with mass spectrometer 6224 TOF/LC/MS, Agilent Technologies
58.	iquid chromatograph with diode array detector and fluorescence detector, LC 1290 Infinity, Agilent Technologies
59.	Liquid chromatograph with Inductively coupled plasma, LC 1260 Infinity coupled with 7700 series ICP-MS, Agilent Technologies
60.	Calcination furnace, Nabertherm - More than heat 30-3000°C
61.	Single-crystal X-ray diffractometer, Super Nova Diffractometer with two sources (Cu and Mo)
62.	Ultrapure water production equipment, Millipore, Milli-Q Advantage A20
63.	Labguard Class II Biological Safety Cabinet, NUAIRE, NU-437-400S
64.	**Particles into liquid aerosol sampler, PILS, PN-III-P4-ID-PCE-2016-0270 Research contract no. 38/2017, invoice ISVDO 569 from 11/13/2017, 112,812.00 lei with VAT**
65.	SEM – Scanning electron microscope and energy dispersive X-Ray analysis detection module, Quanta 250, FEI
66.	Thermal analysis system coupled with FTIR, Thermal system STA 449 F3 Jupiter (Netzsch) coupled with an Spectrometer FT-IR Tensor 27 (Bruker) through a TGA-IR type unit (Bruker)
67.	Atomic absorption spectrometer with graphite furnace, flame and hydride generator, ContrAA 700 Analytik Jena
68.	HR-ToF-AMS Aerosol Chemical Analysis Spectrometer, AMS Aerodyne Research Inc. Aerodyne HR-ToF Aerosol Mass Spectrometer
69.	FT-IR Spectrophotometer with Raman module, FT-IR Vertex 70 coupled with RAMAN II- Bruker module
70.	Spectrofluorimeter, Edinburgh Instruments Xe 900
71.	IR-VCD Spectrometer, Chiral IR-2X, BioTools
72.	500 MHz NMR spectrometer, Bruker Biospin
73.	Proton transfer reaction spectrometer PTR-MS-CI-TOF, KORE Technologies Limited
74.	Super fast OCEAN FX Spectrometer (project prof. PhD Olariu OLFA-ROA)
ESC-Q-UAIC-CERNESIM, chemical reactions in the atmosphere simulation chamber	
75.	**IR source for Bruker 80 FT-IR spectrometer (project EUROCHAMP2020, invoice RSI 459/22-11-2017, 66,640.00 lei with VAT)**
76.	**Modernization of the ESC-Q-UAIC reaction chamber within the CERNESIM Laboratory, development of a temperature regulation and control system in the Reaction Chamber ESC-Q, PN-III-P2-2.1-PED-2016-0924 Research contract no. 78PED/03.01.2017, invoice ETS 17053 from 29.11.2017, 268,226.00 lei without VAT**
77.	Reaction chamber - atmospheric conditions simulating chamber, with a capacity of 760 liters and composed of three quartz tubes, with UV and visible lamps, provided with an evacuation system (preliminary pump coupled to a turbomolecular pump) that can achieve a vacuum of 5 × 10-2 mbar and a White cell with a 492 m optical path

	for the IR domain, coupled to an FT-IR Spectrometer, Vertex 80, Bruker - Equipment integrated in the simulation camera circuit for investigating atmospheric processes at European level (EUROCHAMP 2020)
78.	Ozone generator, ECOTECH GasCal 1100TS
79.	Preparation and storage group for dry and filtered compressed air, NOx free (NO + NO2), free of organic components and zero particles (project DEV-TREC)
80.	Thermal insulation enclosure for the ESC-Q-UAIC reaction chamber coupled with thermostating equipment (Prof. Olariu's project DEV-TREC)
81.	Reactor vacuum and discharge system, including automatically controlled isolation valve (especially at uncontrolled power failure) and connection and sealing components (Prof. Olariu's project DEV-TREC)
AMOS-CERNESIM monitoring station	
82.	CO analyzer , ECOTECH EC 9830 series CO
83.	CO2 analyzer, ECOTECH EC 9820 series CO2
84.	NO/NO2 analyzer, ECOTECH EC 9841 series NOx
85.	Ozone analyzer, ECOTECH EC 9810 series O3
86.	SO2 analyzer, ECOTECH EC 9850 series SO2
87.	Particle analyzer, TSI-Electrostatic Classifier (3080)+Condensation Particle Counter (M3787)
88.	Nephelometer, AURORA 3000, 3 wavelength integrating nephelometer (project prof. Arsene AI-FORECAST)
89.	Stacked Filter Units and pumps
90.	Fixed automatic weather station, model Wheater Hawk GSM-240
91.	13 stages cascade Dekati Low-Pressure Impactor (0.0276-9.94 µm size range)
LAICA - Faculty of Chemistry https://sites.google.com/site/laicaanalizemediu/	
92.	Raypa autoclave
93.	Analytical balances (4 digits)
94.	Gas chromatograph with electron capture detector, Konik HRGC 4000B
95.	Sample calcination furnace (up to 3000°C), Nabertherm
96.	Ultrapure water production equipment (18.2 MΩ cm), Purelab Option Q ELGA
97.	Ion Chromatograph, Dionex 3000
98.	HPLC, Agilent 1100 Series
99.	UV-VIS spectrometer, CINTRA 10e GBC-Australia
100	Manifold vacuum solid phase extraction system with Supelco High Volume Sampler system
101	Raypa autoclave

For databases access, detailed informations are presented in the Internal Assessment Report. The PhD students from the Doctoral School of Chemistry are provided with free access to the resources necessary for the development of their PhD studies, they have free access to at least one platform with relevant databases in Chemistry. Furthermore, the "Alexandru Ioan Cuza" University of Iasi signed with the Association of Universities, Research-Development Institutes and Central University Libraries of Romania, the implementation of the project "National electronic access to the scientific literature to support the research and education system in Romania, ANELIS PLUS 2020". The "Alexandru Ioan Cuza" University of Iasi contribution is 303,228.48 euros. The signed contract allows the access to the database by IP and mobile connection. On the other hand, all members of the Doctoral School of Chemistry, including also PhD students, have access to electronic computer resources, through the Association of Universities, Research-Development Institutes and Central University Libraries of Romania. Additional, in the Doctoral School of Chemistry from IOSUD-UAIC, upon request and with the written consent of the PhD coordinator, each PhD student has access to an electronic system for verifying the degree of similarity with other existing scientific or artistic creations.

PhD coordinators from SDC from IOSU-UAIC are continuous concerned with the permanent renewal of the research infrastructure to ensure that PhD students have access to modern and current research resources (evidences provided in Annex-70, 70-T of the Internal Assessment Report).

The available infrastructure of the Doctoral School of Chemistry is adequate for developing any PhD study in Chemistry.

Recommendations: The venues and the material equipment available to Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi enable the research activities to be carried out, including computers, specific software, laboratory equipment, library, and access to International databases. The equipment available for the students are sufficient for developing their doctoral studies. Furthermore, access to the databases via IP and mobile devices is implanted.

The indicator is fulfilled.

Performance Indicator A.2.1.2. *The Doctoral School has collaboration agreements with higher education institutions, with research institutes, with research networks for various research infrastructures exploitation in partnership and presents publicly its offer of research services through a profile platform.*
The Doctoral School of Chemistry has a collaboration agreement with the Integrated Center of Environmental Science Studies in the North-Eastern Development Region (CERNESIM), of the "Alexandru Ioan Cuza" University of Iasi, and with the "Petru Poni" Institute of Macromolecular Chemistry, for supporting doctoral thesis programs by implementing co-supervision topics.
The Doctoral School of Chemistry has a collaboration with several international research instituions within the Erasmus program. The list of ERASMUS+ agreements for the Faculty of Chemistry is given in the table below.

No.	Partner university	Erasmus Code	Country	Number of students
1	University of Chemical Technology and Metalurgy Sofia	BG SOFIA20	BG	2 SMP
2	Technische Universität Carolo-Wilhelmina zu Braunschweig	D BRAUNSC01	DE	3
3	Rhine-Waal University of Applied Science	D KLEVE01	DE	1
4	Rhine-Waal University of Applied Science	D KLEVE01	DE	1
5	University of Konstanz	D KONSTAN01	DE	1
6	Universite d'Angers	F ANGERS01	FR	2
7	Université Lille 1 - Sciences Et Technologies	F LILLE03	FR	3
8	Université Catholique De Lille	F LILLE11	FR	2
9	National Graduate School of Chemistry/Chem. Eng. of Lille (Fr)	F LILLE13	FR	1
10	Ecole Nationale Supérieure De Chimie De Montpellier	F MONTPEL08	FR	3
11	Université de Paris-Sud (Paris XI)	F PARIS011	FR	2
12	Université Paris-Est Créteil Val-de-Marne (UPEC)	F PARIS012	FR	1
13	Université de Poitiers	F POITIER01	FR	4
14	University of Pannonia	HU VESZPRE01	HU	2
15	Università di Camerino (UNICAM)	I CAMERIN01	IT	2
16	Università della Calabria Arcavacata Di Rende	I COSENZA01	IT	3
17	Utrecht University	NL UTRECHT01	NL	1
18	Jagiellonian University of Krakow	PL KRAKOW01	PL	1SMS+1SMP
19	Wroclaw University of Science and Technology	PL WROCLAW02	PL	2SMS+1SMP
20	Bitlis Eren University	TR BITLIS01	TR	3SMS+3SMP
21	Firat University	TR ELAZIG01	TR	1
22	Marmara University	TR ISTANBU05	TR	2

Recommendations: The Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi has a collaboration agreement with the Integrated Center of Environmental Science Studies in the North-

Eastern Development Region (CERNESIM) and with the "Petru Poni" Institute of Macromolecular Chemistry, for supporting doctoral thesis programs by implementing co-supervision topics. Furthermore, the Doctoral School of Chemistry has a collaboration with several international research instituions within the Erasmus program.

The indicator is fulfilled.

Performance Indicator A.2.1.3. *The Doctoral School demonstrates that it is concerned with the permanent renewal of research infrastructure that allow doctoral students to access current research resources, by applying in various competitions to fund research infrastructure and by acquiring research infrastructure from the IOSUD revenues.*
Currently, the "Alexandru Ioan Cuza" University of Iasi is implementing the project "Research Center with Integrated Techniques for Atmospheric Aerosol Investigation in Romania (en)", granted with 89,570,958.10 RON and is being implemented over 36 months from 04.09.2020. From 10 laboratories targeted to be developed within the project, activities of modernization and endowment with infrastructure are coordinated by members of for 4 laboratories of the Doctoral School of Chemistry - Laboratory of applied chemistry in the science of atmospheric aerosols (RA-01); Air Quality Monitoring Station (RA-02); Laboratory for investigating the physico-chemical processes in the gas phase with implications in the formation of secondary organic aerosols (RA-03); and Laboratory of organic synthesis applied in life and earth sciences (RA-04).

Recommendations: The Doctoral School at "Alexandru Ioan Cuza" University of Iasi is concerned with the permanent renewal of research infrastructure by applying in various competitions coordinated by members of for 4 laboratories of the Doctoral School of Chemistry. Currently, one project named "Research Center with Integrated Techniques for Atmospheric Aerosol Investigation in Romania" was granted with 89,570,958.10 RON and is being implemented over 36 months from 04.09.2020.

The indicator is fulfilled.

Criterion A.3. Quality of Human Resources

The Doctoral School of Chemistry demostrates an adequate quality of human resources to ensure the conduct of the doctoral studies including qualified staff, doctoral advisors with a full-time employment contract, doctoral thesis advisors with proved expertise in the field of the study subjects, percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students does not exceed 20 %, PhD advisors with a scientific activity visible at International level, and at least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation. The most performance indicators have been adequately considered (two were partially fullfilled).

Standard A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.
The Doctoral School of Chemistry demostrates an adequate quality of human resources to ensure the conduct of the doctoral studies including qualified staff, doctoral advisors with a full-time employment

contract, doctoral thesis advisors with proved expertise in the field of the study subjects, and a percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students does not exceed 20 %. All performance indicators have been adequately considered.

Performance Indicator A.3.1.1. *Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.*

The active members staff of the Doctoral School of Chemistry at IOSUD-UAIC includes 7 Professors with the right/ability to conduct scientific PhDs in the doctoral field of Chemistry. The evidences are included in Annex-40, 40-T of the Internal Assessment Report.

Name and surname of the PhD coordinator	OM conferring the quality of PhD coordinator/habilitation	Full permanent staff	Doctoral school affiliation through	Affiliated
ARSENE Cecilia Prof. PhD habil.*	166/07.04.2014	UAIC	UAIC Senate Decision no. 5/26.06.2014	2014-present
BÎCU Elena Prof. PhD	1071/15.05.2007	UAIC	-	2007-present
BÎRSĂ Mihail-Lucian Prof. PhD habil.	4919/18.08.2015	UAIC	UAIC Senate Decision no. 5/24.09.2015	2015-present
DROCHIOIU Gabi Prof. PhD	1071/15.05.2007	UAIC	-	2007-present
MANGALAGIU Ionel Prof. PhD	3573/19.04.2002	UAIC	-	2002-present
OLARIU Romeo-Iulian Prof. PhD habil.*	3972/07.06.2016	UAIC	UAIC Senate Decision no. 9/30.06.2016	2016-present
PUI Aurel Prof. PhD	3656/10.04.2009	UAIC	-	2009-present

The degree of fulfillment of the minimum necessary and mandatory standards for the title of Professor/habilitation in higher education units for the 7 doctoral coordinators reveals that 6 PhD coordinators meet all 6 criteria of Order 6129/2016, field Chemistry; 1 PhD coordinator meets 5 criteria (he does not meet the FICAP criterion, the minimum cumulative impact factor in publications as main author); at the time of obtaining the habilitation certificate the minimum performance conditions for the university professor were satisfied. With respect to the criteria of Order 6129/2016, the percentage of staff with the right of PhD supervising from SDC of IOSUD UAIC, who fully meet the criteria, is 85.71 % :

- for the criterion Nmax (*): 100%
- for the criterion FIC: 100%
- for the criterion FICD: 100%
- for the criterion FICAP: 83.33%
- for the criterion FICAC: 100%
- for the criterion hindex: 100%

Recommendations: 6 PhD coordinators of the Doctoral School at “Alexandru Ioan Cuza” University of Iasi meet all 6 criteria of Order 6129/2016, field Chemistry; 1 PhD coordinator meets 5 criteria (he does not

meet the FICAP criterion, the minimum cumulative impact factor in publications as main author); at the time of obtaining the habilitation certificate the minimum performance conditions for the university professor were satisfied. With respect to the criteria of Order 6129/2016, the percentage of staff with the right of PhD supervising who fully meet the criteria is 85.71 %.

The indicator is fulfilled.

Performance Indicator *A.3.1.2. *At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.*
Annex-39, 39-T of the Internal Assessment Report list the PhD coordinators from IOSUD-UAIC of doctoral studies in Chemistry. There is no data for Dr. Popa Karin who has been working in the EU-Joint Research Center for the last 5 years. 100 % of the Doctoral School of Chemistry at IOSUD-UAIC have a full-time employment contract for an indefinite period.

Recommendations: All PhD advisors of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi have a full-time employment contract for an indefinite period.

The indicator is fulfilled.

Performance Indicator A.3.1.3. *The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.*
The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain in Chemistry are taught by teaching staff who are doctoral thesis advisors or professors with proved expertise in the field of the study subjects they teach.
Details related to the support of the subjects in the training program based on advanced university studies according to the educational plan (Annex-36, 36-T of the Internal Assessment Report), through doctoral course - advanced training program activities (CAD) and doctoral seminar - advanced training program (SAD) is as follows:

2020-2021: Prof. PhD habil. ARSENE Cecilia, Prof. PhD BICU Elena, Prof. PhD habil. BIRSA Mihail Lucian, Prof. PhD DROCHIOIU Gabi, Prof. PhD MANGALAGIU Ionel, Prof. PhD PUI Aurel – all 6 PhD supervising teachers are with the Order of the Minister conferring the quality of PhD coordinator/habilitation and ensure a high degree of fulfillment of the minimum necessary and mandatory standards for the Prof. PhD/Prof. PhD habil. title in higher education.

2019-2020: Prof. PhD habil. ARSENE Cecilia, Prof. PhD BICU Elena, Prof. PhD habil. BIRSA Mihail Lucian, Prof. PhD DROCHIOIU Gabi, Prof. PhD MANGALAGIU Ionel, Prof. PhD habil. OLARIU Romeo Iulian, Prof. PhD PUI Aurel – all 7 PhD supervising teachers are with the Order of the Minister conferring the quality of PhD coordinator/habilitation and ensure a high degree of fulfillment of the minimum necessary and mandatory standards for the Prof. PhD/Prof. PhD habil. title in higher education. In the academic year 2019-2020 for CAD type activities and, respectively, SAD, Prof. PhD

AVARVARI Narcis (Université d'Angers, CNRS, Laboratoire Moltech-Anjou, France) and Assoc. Prof. PhD MIHAILCIUC Constantin (University of Bucharest) were also employed. As Prof. PhD AVARVARI was unable to travel to Romania, his activities were supported by Assoc. Prof. PhD MIHAILCIUC. Both, Profesor AVARVARI and Professor MIHAILCIUC were recognized in relation to the standards set at the institutional level.

2018-2019: Prof. PhD habil. ARSENE Cecilia, Prof. PhD BICU Elena, Prof. PhD habil. BIRSA Mihail Lucian, Prof. PhD DROCHIOIU Gabi, Prof. PhD MANGALAGIU Ionel, Prof. PhD habil. OLARIU Romeo Iulian, Prof. PhD PUI Aurel – all 7 PhD supervising teachers are with the Order of the Minister conferring the quality of PhD coordinator/habilitation and ensure a high degree of fulfillment of the minimum necessary and mandatory standards for the Prof. PhD/Prof. PhD habil. title in higher education.

2017-2018: Prof. PhD habil. ARSENE Cecilia, Prof. PhD BICU Elena, Prof. PhD habil. BIRSA Mihail Lucian, Prof. PhD DROCHIOIU Gabi, Prof. PhD MANGALAGIU Ionel, Prof. PhD habil. OLARIU Romeo Iulian, Prof. PhD PUI Aurel – all 7 PhD supervising teachers are with the Order of the Minister conferring the quality of PhD coordinator/habilitation and ensure a high degree of fulfillment of the minimum necessary and mandatory standards for the Prof. PhD/Prof. PhD habil. title in higher education.

Recommendations: All PhD supervisors of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi are teaching staff with proved expertise in the field of the study subjects they teach and they got their habilitations in higher education.

The indicator is fulfilled.

Performance Indicator *A.3.1.4. *The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs[3] does not exceed 20%.*

Annex-73, 73-T of the Internal Assessment Report shows the situation of all PhD coordinators and the number of coordinated PhD students from 2015 until now, and the situation of all PhD students in the doctoral field of Chemistry in the period 2013-2021 as well. In the Doctoral School of Chemistry of IOSUD-UAIC there are no PhD coordinators who coordinate more than 8 PhD students at the same time.

Recommendations: In the of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi, there are no PhD coordinators who coordinate more than 8 PhD students at the same time

The indicator is fulfilled.

[3] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No.1/2011 with subsequent amendments and additions, with additional extension periods approved as per Article 39, paragraph (3) of the Code of doctoral studies approved by the GD No. 681/2011 with subsequent amendments and additions.

Standard A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at International level.

The Doctoral School of Chemistry demostrates an adequate quality of human resources to ensure the conduct of the doctoral studies including PhD advisors with a scientific activity visible at International level, and at least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation. All performance indicators have been partially fullfilled.

Performance Indicator A.3.2.1. *At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including International-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy International awareness within the past five years, consisting of: membership on scientific boards of International publications and conferences; membership on boards of International professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their International visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and International competitions, membership on juries or umpire teams in artistic events or International competitions.*

Each of the 7 PhD coordinators at Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi have more than 12 publications indexed in Web of Science in the period 2014-2021, which is substantially higher than the required 5 scientific publications indexed in Web of Science in the performance indicator. All PhD coordinators have relevant significance in their field of expertise and International visibility which is evidenced by the significant number of citations of their articles. However, the membership in scientific committees of publications and conferences, invited speakers in conferences or groups of experts held abroad, member of the commissions for the defence of doctoral theses at foreign universities, co-supervision with a foreign university, etc) are not demonstrated. The evidences provided are supported in the tables below.

Number of WoS papers published by PhD coordinators of the Doctoral School of Chemistry at IOSUD-UAIC.

PhD coordinator	2021	2020	2019	2018	2017	2016	2015	2014	Total 2021-2014	Until 2014	Total
ARSENE Cecilia	0	1	3	2	2	0	4	0	12	41	53
BICU Elena	0	4	2	0	2	6	5	6	25	29	54
BIRSA Mihail Lucian	0	3	6	3	5	14	9	18	58	45	103
DROCHIOIU Gabi	2	8	14	6	4	10	4	5	53	49	102
MANGALAGIU Ionel	3	9	6	3	4	11	7	8	51	91	142
OLARIU Romeo Iulian	0	2	4	2	4	0	6	0	18	48	66
PUI Aurel	2	9	7	3	4	6	1	6	38	66	104
Total Doctoral School of Chemistry	7	39	44	19	25	47	36	43	255	369	624

Number of citations in Scopus for PhD coordinators of the Doctoral School of Chemistry at IOSUD-UAIC.

PhD coordinator	Total	Exclude self citations of selected author	Exclude self citations of all authors

	Total	2018-2021	<2017	Total	2018-2021	<2017	Total	2018-2021	<2017
ARSENE Cecilia	1419	516	903	1375	508	867	1158	485	673
BICU Elena	644	250	523	507	223	284	412	189	223
BIRSA Mihail Lucian	1180	657	523	870	584	286	711	430	281
DROCHIOIU Gabi	1053	376	677	779	275	504	675	255	420
MANGALAGIU Ionel	2024	695	1329	1547	555	992	1305	473	832
OLARIU Romeo Iulian	1637	649	988	1571	636	935	1339	607	732
PUI Aurel	984	443	541	867	386	481	746	348	398

Hirsch Index according to Scopus for PhD coordinators of the Doctoral School of Chemistry at IOSUD-UAIC.

PhD coordinator	h-index (total)	Exclude self citations of selected author	Exclude self citations of all authors
ARSENE Cecilia	17	17	15
BICU Elena	16	13	12
BIRSA Mihail Lucian	21	16	16
DROCHIOIU Gabi	19	15	14
MANGALAGIU Ionel	27	23	21
OLARIU Romeo Iulian	19	19	17
PUI Aurel	17	17	16

Number of citations and the Hirsch index according to Google Scholar for PhD coordinators of the Doctoral School of Chemistry, IOSUD-UAIC.

PhD coordinator	Total citing references	citing references (since 2016)	h-index (total)	h-index (since 2016)
ARSENE Cecilia	1859	808	19	13
BICU Elena	759	421	24	19
BIRSA Mihail Lucian	1337	881	23	16
DROCHIOIU Gabi	1476	615	21	10
MANGALAGIU Ionel	2445	1184	29	18
OLARIU Romeo Iulian	2144	973	23	15
PUI Aurel	1273	675	19	16

Hirsch index according to the WOS database for PhD coordinators of the Doctoral School of Chemistry at IOSUD-UAIC.

PhD coordinator	ARSENE Cecilia	BICU Elena	BIRSA Mihail Lucian	DROCHIOIU Gabi	MANGALAGIU Ionel	OLARIU Romeo Iulian	PUI Aurel
Hirsch index	16	15	23	18	26	19	17

Recommendations: All 7 PhD coordinators at the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi have more than 12 indexed publications in the Web of Science in the period 2014-2021. All PhD coordinators have relevant significance for their field of expertise and International visibility which is evidenced by the significant number of citations of their articles. However, the membership in scientific committees of publications and conferences, invited speakers in conferences or groups of experts held abroad, member of the commissions for the defence of doctoral theses at foreign universities, co-supervision with a foreign university, etc) are not demonstrated.

The indicator is partially fulfilled.

Performance Indicator *A.3.2.2. *At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by*

the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years.

For the 7 PhD coordinators of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi, 6 PhD coordinators meet all criteria of Order 6129/2016, Chemistry field, and 1 PhD coordinator meets 5 criteria but does not meet the FICAP criterion. All doctoral thesis advisors continue to be active in their scientific field, and 6 of them acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation. The one doctoral thesis advisor having a score lower than 25 % in $FICA_P$ criterion accounts for a percentage of the16 % of the total. Thus, the percentage of the PhD advisors Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi with the right of PhD supervising who fully meet all criteria is 85.71 %, being 100 % for the Nmax criterion, the FIC criterion, FIC_D criterion, $FICA_C$ criterion and the hindex criterior; only for $FICA_P$ criterion, the percentage is 83.33 %.

PhD coordinator	The criterion from ORDER no. 6129 published in the Official Journal of Romania 448/20.12.2016					Degree of fullfilment
Imposed by O.M.	**N_{max}**	**FIC**	**FIC_D**	**FIC_{AP}**	**FIC_{AC}**	
	50	**100**	**70**	**50**	**25**	
25% from maximum	**13**	**25**	**17.5**	**12.5**	**6.23**	
Prof. PhD habil. ARSENE Cecilia	13	26.855	25.100	18.313	18.313	Fullfiled
Prof. PhD BICU Elena	19	52.396	52.396	24.613	24.613	Fullfiled
Prof. PhD habil. BIRSA Mihail Lucian	*12*	40.455	40.455	25.958	25.958	Fullfiled
Prof. PhD DROCHIOIU Gabi	30	44.017	44.017	26.121	26.121	Fullfiled
Prof. PhD MANGALAGIU Ionel	33	86.200	86.200	27.420	27.420	Fullfiled
Prof. PhD habil. OLARIU Romeo-Iulian	13	38.370	38.370	*7.34*	6.37	Partially fullfiled
Prof. PhD PUI Aurel	17	65.066	65.066	20.540	21.204	Fullfiled

(*) N_{max}: the first maximum N papers, organized in descending order of the impact factors of the journals in which they were published;
(**) FIC: the minimum cumulative impact factor of the journals in which the papers in question were published;
(***) FIC_D: the minimum cumulative impact factor of publications in the declared research fields;
(****) FIC_{AP}: the minimum cumulative impact factor in publications as main author (first author and correspondent);
(*****) FIC_{AC}: the minimum cumulative impact factor in publications as correspondent.

Recommendations: All doctoral thesis advisors continue to be active in their scientific field, and 6 of them acquire at least 25 % of the score requested by the minimal CNATDCU standards in force at the time of the evaluation. The one doctoral thesis advisor having a score lower than 25 % in FICAP criterion accounts for a percentage of 16 % of the total. Thus, the percentage of the PhD advisors Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi with the right of PhD supervising who fully meet all criteria is 85.71 %.

The indicator is partially fulfilled.

Domain B. EDUCATIONAL EFFECTIVENESS

The Doctoral School of Chemistry demostrates an educational effectiveness on the basis of the number, quality and diversity of candidates enrolled for the admission contest, the content of doctoral program in Chemistry, and the results of doctoral studies in Chemistry and procedures for their evaluation. All performance indicators have been adequately fullfilled.

Criterion B.1. The number, quality and diversity of candidates enrolled for the admission contest

The Doctoral School of Chemistry demostrates an educational effectiveness on the basis of the number, quality and diversity of candidates enrolled for the admission contest, including the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available, adequate selection criteria for the admission to doctoral study program in Chemistry, and expelling rate of doctoral students does not exceed 30 %. The performace indicator related to the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available is partially fullfilled. The remaining performace indicators have been adequately fullfilled.

Standard B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

The Doctoral School of Chemistry demostrates an educational effectiveness on the capacity of the PhD doctoral School of Chemistry to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available. This performace indicator is not fullfilled.

Performance Indicator *B.1.1.1. *The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.*

The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral studies in Chemistry at IOSUD-UAIC in the last 5 years and the number of places financed from the state budget into the competition in the doctoral school is 0.08, this is lower than the requested performance indicator (0.2). On the other hand, the ratio of the number of candidates in the last five years and the number of places financed by the state budget into the competition in the doctoral studies in Chemistry at IOSUD-UAIC is 0.68, this is lower than the requested perfromance indicator (1.2). The ratios for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019, 2019-2020 is shown in the table below.

Academic year	Number of places financed from the state budget for	Total number of registered candidates	Number of registered candidates-graduates of master programs from	Number of registered candidates-graduates of master's programs	Number of registered candidates-5-year long-term education graduates	Ratio of no. master's degree graduates from other institutions/	Ratio of No. of candidates in the last five years and the no. of places financed from

	the field of Chemistry		IOSUD-UAIC	from other institutions	(without master's degree)	no. budget places col. 5/col. 2	the state budget col. 3/col. 2
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
2015-2016	10	4	3	1	0	0.1	0.4
2016-2017	6	6	6	0	0	0	1.0
2017-2018	5	6	3	2	1	0.4	1.2
2018-2019	7	2	2	0	0	0	0,28
2019-2020	7	6	6	0	0	0	0.85
TOTAL	35	24	20	3	1	**0.08**	**0.68**

The performance indicator is not fullfilled and mechanisms for attracting more master's degree graduates of other higher education institutions in the country or abroad for the competition for admission to doctoral studies in Chemistry at IOSUD-UAIC. There were two main reasons for not reaching adequate ratios :

1) The existence of the Gheorghe Asachi Technical University and the Petru Poni Institute of Macromolecular Chemistry in Iasi, they are offering doctoral programs in Chemistry. The students decided the doctoral school they considered more appropriate.
2) The number of doctoral subject and funded research projects are much higher at the Petru Poni Institute of Macromolecular Chemistry in Iasi, and thus, higher amounts of the doctoral grants and broad variety of equipments than in Alexandru Ioan Cuza University are offered. It should be considered that higher bursetary doctoral grants are needed by the students coming from abroad Iasi.

Recommendations: The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral studies in Chemistry at Alexandru Ioan Cuza University in the last 5 years and the number of places financed from the state budget into the competition in the doctoral school is 0.08, this is lower than the requested performance indicator (0.2). On the other hand, the ratio of the number of candidates in the last five years and the number of places financed by the state budget into the competition in the doctoral studies in Chemistry at Alexandru Ioan Cuza University is 0.68, this is lower than the requested perfromance indicator (1.2).

There were two main reasons for not reaching the performance indicator threeshold :

1) The existence of the Gheorghe Asachi Technical University and the Petru Poni Institute of Macromolecular Chemistry in Iasi, they are offering doctoral programs in Chemistry. The students decided the doctoral school they considered more appropriate.
2) The number of doctoral subject and funded research projects are much higher at the Petru Poni Institute of Macromolecular Chemistry in Iasi, and thus, higher amounts of the doctoral grants and broad variety of equipments than in Alexandru Ioan Cuza University are offered. It should be considered that higher bursetary doctoral grants are needed by the students coming from abroad Iasi.

The PhD School of Chemistry at Alexandru Ioan Cuza University should made efforts for attracting students from abroad. It is suggested the publicizing in media and an increase of the bursetary amount of the doctoral grants for students coming from abroad Iasi.

The indicator is not fulfilled.

Standard B.1.2 Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

The Doctoral School of Chemistry demostrates an educational effectiveness on the admission of candidates on the basis of adequate selection criteria and the expelling rate of doctoral students lower than 30 %. The performance indicators have been adequately considered.

Performance Indicator *B.1.2.1. *Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.*

The rules and regulation on the organization and functioning of the doctoral studies program within the Doctoral School of Chemistry at at Alexandru Ioan Cuza University regulates the manner of conducting the admission and selection of candidates for doctoral studies. The admission competition includes specific tests on Chemistry and an examination of linguistic skills. The competition tests are held in front of the admission commission approved by CSUD, the doctoral coordinator being mandatory part of the admission committee. Further, the candidate's registration file includes information on the research topic of interest (selected from the topics/proposals of PhD coordinators), Curriculum Vitae, list of scientific papers of the candidate (if applicable) and certificate of knowledge of a foreign language (usually English), all them are considered by the admission commission in the admission process. The admission folder also includes certification documents as well as copies of the diplomas attesting the professional training of the candidates.

In the Doctoral School of Chemistry at at Alexandru Ioan Cuza University, the minimum admission average is 8 (eight), the candidates being admitted in descending order of the admission average, within the number of vacant PhD positions at each doctoral coordinator and at the level of the doctoral school. As as part of the admission procedure, the selected candidates have a compulsory interview with the PhD supervisors.

The research topics selected by the candidates from 2017/2018 academic year till present (the year in which the new Director of the Doctoral School, Prof. PhD habil. Cecilia Arsene, entered the position) are detailed below.

Academic year 2020-2021

1) APOSTOL Vlad - Research topic: Investigation of optical and chemical properties of tropospheric aerosols from polluted urban areas using in situ analytic techniques. PhD coordinator : Prof. PhD habil. Cecilia ARSENE
2) IANCU Cristina - Research topic: The influence of primary bioaerosol particles in the urban troposphere on atmospheric processes. PhD coordinator : Prof. PhD habil. Cecilia ARSENE
3) JITARU Ştefania Claudia - Research topic: Study of the binding of metal ions to peptides involved in neurodegenerative deseases, by MALDI-ToF mass spectrometry, infrared spectroscopy and other techniques used in proteomics. PhD coordinator : Prof. PhD Gabi DROCHIOIU
4) MIHALCEA Elena - Research topic: Fast and sensitive methods for determining proteins and peptides. PhD coordinator : Prof. PhD Gabi DROCHIOIU
5) RADU Ioana - Research topic: Functionalized magnetic nanoparticles for various applications. PhD coordinator : Prof. PhD Aurel PUI

Academic year 2019-2020

1) DANILA Raluca Stefania - Research topic: Magnetic nanoparticles with different applications. PhD coordinator : Prof. PhD Aurel PUI
2) GAVRIL Andra Ionela - Research topic: Synthesis of chalcones and derivatives with special properties - PhD coordinator : Prof. PhD Elena BÎCU. The candidate did not obtain the score needed to obtain a doctoral grant.
3) ION Cristina Smarandita - Research topic: Compounds with azaheterocyclic structure involved in artificial ion channels and water channels. PhD coordinator : Prof. PhD Ionel MANGALAGIU
4) MAIREAN Ciprian Paul - Research topic: The study of the atmospheric degradation of some unsaturated esters. PhD coordinator : Prof. PhD habil. Romeo Iulian OLARIU
5) MOCANU Cosmin Stefan - Research topic: Peptide synthesis and their characterization by mass spectrometry, infrared spectroscopy and atomic force microscopy: biomedical applications. PhD coordinator : Prof. PhD Gabi DROCHIOIU
6) ZUBAS Andreea - Research topic: Syntheses of chalcones and chalcone derivatives with special properties. PhD coordinator : Prof. PhD Elena BÎCU

Academic year 2018-2019
1) AMARANDEI Cornelia - Research topic: Chemical characterisation of secondary organic aerosols in ambient particulate matter from Iasi, north-eastern Romania. PhD coordinator : Prof. PhD habil. Cecilia ARSENE
2) NEGRU Georgiana - Research topic: Synthesis of new azaheterocycles with special properties. PhD coordinator : Prof. PhD Elena BICU

Academic year 2017-2018
1) BRADATAN Liliana (married ONICIUC) - Research topic: Azaheterocycles with condensated nuclei : Synthesis, structure and properties. PhD coordinator : Prof. PhD Ionel MANGALAGIU
2) CLOSCA Marius Catalin - Research topic: Peptide synthesis with biomedical implications. PhD coordinator : Prof. PhD Gabi DROCHIOIU
3) CUCU Dumitrela - Research topic: New hybrid compounds containing five- and six-atom azaheterocycles. PhD coordinator : Prof. PhD Ionel MANGALAGIU
4) ILISEI Andana - Research topic: Contributions to the study of polluted waters in Neamţ County and their effect on living organisms. PhD coordinator : Prof. PhD Gabi DROCHIOIU
5) RUSU Ana Maria - Research topic: Chemical degradation study of selected volatile organic compounds under simulated atmospheric conditions. Theoretical and practical approaches. PhD coordinator : Prof. PhD habil. Romeo Iulian OLARIU
6) SOROAGA Valentin Laurentiu - Research topic: Applying optical and electronic spectral techniques to the identification and quantification of rare and refractory elements in the environment. PhD coordinator : Prof. PhD habil. Romeo Iulian OLARIU

Sufficient evidences related to the above mentioned aspects are given in Annex-77, 77-T of the Internal Assessment Report.

Recommendations: The admission competition in the Doctoral School of Chemistry at Alexandru Ioan Cuza University includes specific tests on Chemistry and an examination of linguistic skills. The candidate's registration file includes information on the research topic of interest (selected from the

topics/proposals of PhD coordinators), Curriculum Vitae, list of scientific papers of the candidate (if applicable) and certificate of knowledge of a foreign language (usually English), all them are considered by the admission commission in the admission process. The admission folder also includes certification documents as well as copies of the diplomas attesting the professional training of the candidates. The minimum admission average is 8, the candidates being admitted in descending order of the admission average, within the number of vacant PhD positions at each doctoral coordinator and at the level of the doctoral school. As as part of the admission procedure, the selected candidates have a compulsory interview with the PhD supervisors.

The indicator is fulfilled.

Performance Indicator B.1.2.2. *The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission[4] does not exceed 30%.*
The average expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University in the period of evaluation is 15 % which does not exceed the critical threshold of 30 %.

Admission session for PhD studies	Number of PhD students enrolled in the 1st year of PhD by Decision of the Rector	The number of PhD students **in the 3rd year of the PhD**	*Number of PhD students, excluded, including after dropping out of studies*	**Exclusion rate, including after dropping out of school col.4/col. 2**
1	*2*	*3*	*4*	*5*
September 2020	5	5	0	0%
September 2019	5	5	0	0%
September 2018	2	2	0	0%
September 2017	6	4	2	33%
September 2016	6	5	1	17%
September 2015	3	3	0	0%
September 2014	8	6	2	25%
The average value of the dropout rate of PhD students				**15%**

From September 2014, 5 PhD students have been excluded in the 3rd year of studies and 3 PhD students have been excluded during the extension. In general, the expelling rate of PhD students in the Doctoral School of Chemistry at IOSUD-UAIC is quite low, and only in September 2017 and September 2016, an expelling rate of 33 and 17 % respectively happened. During the meeting with the representatives of the doctoral program in Chemistry, the reasons for the expelling rate of PhD students were clarified, all them was voluntary due to insufficient monetary grants (insufficient for cover the minimum living costs).

Recommendations: The average expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University in the period of evaluation is 15 % which does not exceed the critical threshold of 30 % imposed by the performance indicator. During the evaluation period, 5 PhD students have been excluded in the 3rd year of studies and 3 PhD students have been excluded during the

[4] 3 years for the doctoral university studies with the duration stipulated at Article 159, paragraph (3), respectively 4 years for the doctoral university studies with the duration stipulated at Article 174, paragraph (3) of the Law of national education No. 1/2011 with subsequent amendments and additions.

extension. In general, the expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University is quite low.

The indicator is fulfilled.

Criterion B.2. The content of doctoral programs

The Doctoral School of Chemistry demostrates an educational effectiveness on the content of doctoral program in Chemistry, including a training program based on advanced university studies to improve doctoral students' research skills and to strengthen ethical behavior in science. All performance indicators have been adequately fullfilled.

Standard B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

The Doctoral School of Chemistry demostrates an educational effectiveness based on an advance training program that includes at least 3 disciplines relevant to the scientific research and at least one of these disciplines is intended to study in-depth the research methodology. Furthermore, at least one discipline is dedicated to Ethics and Intellectual Property in scientific research, and provides mechanisms to ensure that the academic training program addresses the knowledge, skills, responsibility and autonomy that doctoral students should acquire through the research activities. Additional, all along the duration of the doctoral training, the doctoral students in the Chemistry domain receive guidance from commissions, and the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance does not exceed 3:1. All performance indicators have been adequately fullfilled.

Performance Indicator B.2.1.1. *The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.*

The existence of 3 disciplines relevant for the training in scientific research of the PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University, of which at least one discipline intended for the in-depth study of research methodology, is clearly demostrated as is evidenced in the table below.

Acad. year (series)	No.	Mandatory courses (OB) and activated optionals (OP)	Relevance for research methodology/data statistics
Doctoral School of Chemistry (Annex-01, Annex-02 and Annex-03)			
2020-2021 (2020-2023)	1	Fundamental concepts and recent developments in chemistry (OB)	X
	2	Experimental techniques and data handling in chemistry (OP)	X
	3	Complementary training module (OP)	X
2019-2020 (2019-2022)	1	Fundamental concepts and recent developments in chemistry (OB)	X
	2	Experimental techniques and data handling in chemistry (OP)	X
	3	Complementary training module (OP)	X
2018-2019 (2018-2021)	1	Fundamental concepts and recent developments in chemistry (OB)	X
	2	Experimental techniques and data handling in chemistry (OP)	X
	3	Complementary training module (OP)	X
2017-2018 (2017-2020)	1	Fundamental concepts and recent developments in chemistry (OB)	X
	2	Experimental techniques and data handling in chemistry (OP)	X

	3	Complementary training module (OP)	X
Doctoral School of Chemistry and Life and Earth Sciences (fields of Biology, Chemistry, Geography, Geology, Environmental science) (Annex-01, Annex-02 and Annex-03)			
2016-2017 (2016-2019)	1	Experimental techniques, processing and presentation of results in the field of specialization (OB)	X
	2	Current trends in basic and applied research (OB)	X
	3	Complementary training module (OB)	X

Recommendations: The existence of 3 disciplines relevant for the training in scientific research of the PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University, of which at least one discipline intended for the in-depth study of research methodology, is clearly demostrated.

The indicator is fulfilled.

Performance Indicator B.2.1.2. *At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.*

From the academic year 2018-2019, the ethics course is compulsory for all PhD students in the first year and the importance of the ethics and academic deontology is taken into account during the entire duration of the PhD training for each PhD student, including the PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University. The table below provides more detailed information.

Acad. year (series)	No.	Mandatory courses (OB) and optional activated (OP)	Relevance to ethics in scientific research
Doctoral School of Chemistry (Annex-01, Annex-02 and Annex-03)			
2020-2021 (2020-2023)	1	Ethics and academic integrity (OB)	X
2019-2020 (2019-2022)	1	Ethics and academic integrity (OB)	X
2018-2019 (2018-2021)	1	Ethics code and academic integrity in scientific writing, communicating science and plagiarism awareness (OB)	X
2017-2018 (2017-2020)	1	Scientific writing, communicating science and plagiarism awareness (OP)	X
Doctoral school of chemistry and life and earth sciences (fields of Biology, Chemistry, Geography, Geology, Environmental science) (Annex-01, Annex-02 and Annex-03)			
2016-2017 (2016-2019)	1	Research and exploitation of results in chemistry and natural sciences (Chimie & Geologie) (OP)	X

Recommendations: From the academic year 2018-2019, the ethics course is compulsory for all PhD students in the first year and the importance of the ethics and academic deontology is taken into account during the entire duration of the PhD training for each PhD student, including the PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University.

The indicator is fulfilled.

Performance Indicator B.2.1.3. *The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities*[5].

The Doctoral School of Chemistry at Alexandru Ioan Cuza University ensures that the training program based on advanced university studies address "the learning outcomes" needed for providing the needed skills of the doctoral students upen complexion of the doctoral program. Annex-37, 37-T of the Internal Assessment Report details the specific indicators for the competencies accumulated (professional and transversal) knowledge, skills and responsibility and autonomy that the PhD students should acquire.

The PhD coordinators Doctoral School of Chemistry at IOSUD-UAIC aim to create an adequate framework that allows PhD students:

1) Acquire advanced knowledge in Chemistry;
2) Develop the capacity to identify, formulate and solve research problems in Chemistry;
3) Develop the skills needed for assimilating advanced research methods and techniques;
4) Training in the management of research projects;
5) Rapid identification of new procedures and solutions in Chemistry research;
6) Develop skills for reading, elaborating and summarizing scientific works/report/articles writing in English at academic level;
7) Understanding and applying the principles and values of scientific research ethics in Chemistry;
8) Develop written and oral communication skills in the Chemistry;
9) Use of information and communication technology;
10) Develop relationship skills and teamwork abilities;
11) Develop leadership qualities;
12) Develop knowledge on career management, as well as mastering techniques for looking for a job and creating jobs for others;
13) Develop knowledge on risk, crisis and failure management;
14) Develop knowledge on the use of legislation in the field of intellectual property rights;
15) Develop economic and technological entrepreneurship capacities;
16) Development of the PhD student's scientific research skills by encouraging the participation in conferences, writing scientific publications, participation in workshops, summer and winter schools, etc.

Recommendations: The Doctoral School of Chemistry at Alexandru Ioan Cuza University ensures that the training program based on advanced university studies address "the learning outcomes" needed for providing the needed skills of the doctoral students upen complexion of the doctoral program, they include the competencies on knowledge, skills and responsibility and autonomy that the PhD students should acquire.

The indicator is fulfilled.

[5] Or by what the graduate should know, understand and to be able to do, according to the provisions of the Methodology of 17 March 2017 regarding inscription and registration of higher education qualifications in the National Register of Qualifications in Higher Education (RNCIS) approved by the Order No.3475/2017 with subsequent amendments and additions.

Performance Indicator B.2.1.4. *All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.*

Throughout the entire doctoral training period, the PhD students from the Doctoral School of Chemistry at Alexandru Ioan Cuza University benefit from counseling and guidance from the members of the guidance commissions. Evidences for the guidance activities, written feedback or regular meetings are provided in Annex-53, 53-T and Annex-54, 54-T of the Internal assessment Report for PhD students in stage and extended stage, Annex-55, 55-T and Annex-56, 56-T for graduates, and Annex-57, 57-T and Annex-58, 58-T for expelled PhD students. The following table is providing detailed evidences for all PhD students involved in the reporting period.

PhD student / *The situation of the PhD student on 01.05.2021*	Topic	The composition of the guidance commission on 01.05.2021	Activities in the individual scientific research program	Scheduled report submission date	Date of activities of the guiding commissions and evaluation
PhD students enrolled in the first year, academic year 2020-2021					
APOSTOL I. VLAD *PhD 1st year*	Investigation of optical and chemical properties of tropospheric aerosols from polluted urban areas using *in situ* analytic techniques	1. Prof. PhD habil. Cecilia ARSENE – **PhD coordinator** 2. Prof. PhD habil. Romeo Iulian OLARIU 3. Prof. PhD Ionel MANGALAGIU 4. Lect. PhD Iustinian Gabriel BEJAN	Investigation of the optical and chemical properties of tropospheric aerosols in urban areas polluted by in situ analytical techniques (PR)	30.09.2021	-
			Methods and techniques of analysis for the investigation of the chemical composition and optical properties specific to tropospheric aerosol particles (R-01)	30.09.2022	-
			The relationship between the chemical composition of atmospheric aerosol particles and their radiative properties (R-02)	30.06.2023	-
			Investigation of optical and chemical properties of tropospheric aerosols from polluted urban areas using *in situ* analytic techniques (T)	31.07.2023	-
IANCU P. CRISTINA *PhD 1st year*	The influence of primary bioaerosol particles in the urban troposphere on atmospheric processes	1. Prof. PhD habil. Cecilia ARSENE – **PhD coordinator** 2. Prof. PhD habil. Romeo Iulian OLARIU 3. Assoc. Prof. PhD. habil. Dragos Lucian GORGAN,	The influence of primary bioaerosol particles in the urban troposphere on atmospheric processes (PR)	31.09.2021	-
			Instrumental methods applied in the investigation of atmospheric bioaerosols (R-01)	31.09.2022	-

		Faculty of Biology UAIC 4. Assoc. Prof. PhD. Naela COSTICA, Faculty of Biology UAIC	The role of biochemical tracers in atmospheric biaerosols for assigning specific sources (R-02)	31.05.2023	-
			The influence of primary bioaerosol particles in the urban troposphere on atmospheric processes (T)	30.06.2023	-
JITARU N. STEFANIA-CLAUDIA *PhD 1st year*	Study of the binding of metal ions to peptides involved in neurodegenerative deseases, by MALDI-ToF mass spectrometry, infrared spectroscopy and other techniques used in proteomics	1. Prof. PhD Gabi DROCHIOIU – **PhD Coordinator** 2. Prof. PhD Aurel PUI 3. Assoc. Prof. PhD. Vasile-Robert GRĂDINARU 4. Assoc. Prof. PhD. Brindusa-Alina PETRE	Study of the binding of metal ions to peptides involved in neurodegenerative deseases, by MALDI-ToF mass spectrometry, infrared spectroscopy and other techniques used in proteomics (PR)	30.09.2021	-
			Current state of research on the role of peptides in neorodegenerative diseases (R-01)	30.09.2022	-
			Results obtained in the study and synthesis of some peptides of biomedical interest (R-02)	26.05.2023	-
			Study of the binding of metal ions to peptides involved in neurodegenerative deseases, by MALDI-ToF mass spectrometry, infrared spectroscopy and other techniques used in proteomics (T)	31.07.2023	-
MIHALCEA V. ELENA *PhD 1st year*	Fast and sensitive methods for determining proteins and peptides	1. Prof. PhD Gabi DROCHIOIU – **PhD coordinator** 2. Assoc. Prof. PhD. Vasile-Robert GRĂDINARU 3. Assoc. Prof. PhD. Brînduşa-Alina PETRE 4. Assoc. Prof. PhD. Gheorghiţă ZBANCIOC	Fast and sensitive methods for determining proteins and peptides (PR)	30.09.2021	-
			Current state of research on the determination of proteins and peptides with modern methods of analysis (R-01)	30.09.2022	-
			Results obtained in the determination of proteins and peptides with the spectrophotometric method (R-02)	26.05.2023	-
			Fast and sensitive methods for determining proteins and peptides (T)	31.07.2023	-
RADU M. IOANA *PhD 1st year*	Functionalized magnetic	1. Prof. PhD Aurel PUI – **PhD coordinator**	Studies on the functionalization of	30.06.2021	-

	nanoparticles for various applications	2. Prof. PhD Ovidiu Călţun 3. Prof. PhD Ramona-Antoaneta DĂNAC 4. SR Assist. PhD Tiberiu ROMAN	magnetic particles and their applications (PR)		
			Nanomaterials with oxide structure. Synthesis and characterization (R-01)	28.02.2022	-
			Applications of nanomaterials with oxide structure (R-02)	31.10.2022	-
			Functionalized magnetic nanoparticles for various applications (T)	31.05.2023	-
PhD students enrolled in the first year, academic year 2019-2020					
DANILA R.F. RALUCA-STEFANIA *PhD 2nd year*	Magnetic nanoparticles with different apllications	1. Prof. PhD Aurel PUI – **PhD coordinator** 2. Assoc. Prof. PhD. Nicoleta CORNEI 3. Prof. PhD Ramona Antoaneta DANAC 4. Assoc. Prof. PhD. Maria IGNAT	Magnetic nanoparticles with different apllications (PR)	29.09.2020	29.09.2020 Good
			Methods for obtaining and characterizing magnetic nanoparticles (R-01)	31.05.2021	28.05.2021 Very good
			Study of some applications of magnetic nanoparticles (R-02)	17.12.2021	-
			Magnetic nanoparticles with different apllications (T)	30.06.2022	-
ION L. CRISTINA-SMARANDITA *PhD 2nd year*	Compounds with azaheterocyclic structure involved in artificial ion channels and water channels	1. Prof. PhD Ionel MANGALAGIU – **PhD coordinator** 2. Prof. PhD habil. Romeo Iulian OLARIU 3. Prof. PhD Ramona Antoaneta DANAC 4. Assoc. Prof. PhD. Gheorghita ZBANCIOC	Ionic channels. Potential applications in the biomedical field (PR)	30.09.2020	30.09.2020 Very good
			Phenanthroline derivatives. Applications in biomimetic channels (R-01)	30.09.2021	-
			Ionic channels and artificial water channels containing azaheterocyclic derivatives (R-02)	29.04.2022	-
			Compounds with azaheterocyclic structure involved in artificial ion channels and water channels (T)	29.07.2022	-
MAIREAN A. CIPRIAN-PAUL *PhD 2nd year*	The study of the atmospheric degradation of some Unsaturated Esters	1. Prof. PhD habil. Romeo Iulian OLARIU – **PhD coordinator** 2. Prof. PhD habil. Cecilia ARSENE 3. Prof. PhD Ionel MANGALAGIU 4. Lect. PhD Iustinian Gabriel BEJAN	Techniques and methods for evaluating the mechanisms of atmospheric degradation of unsaturated esters (PR)	29.09.2020	29.09.2020 Very good
			Methods used in the study of gaseous products resulting from the degradation of unsaturated esters under simulated atmospheric conditions (R-01)	30.07.2021	-
			Evaluation of the degree of formation of secondary organic	31.03.2022	-

			aerosols following atmospheric oxidation of unsaturated esters (R-02)		
			The study of the atmospheric degradation of some Unsaturated Esters (T)	29.07.2022	-
MOCANU V. COSMIN-STEFAN *PhD 2nd year*	Peptide synthesis and their characterization by mass spectrometry, infrared spectroscopy and atomic force microscopy: biomedical applications	1. Prof. PhD Gabi DROCHIOIU – **PhD coordinator** 2. Assoc. Prof. PhD. Vasile-Robert GRADINARU 3. Assoc. Prof. PhD. Brindusa Alina PETRE 4. Assoc. Prof. PhD. Gheorghita ZBANCIOC	Peptide synthesis and their characterization by mass spectrometry, infrared spectroscopy and atomic force microscopy: biomedical applications (PR)	30.09.2020	30.09.2020 Very good
			Biomedical applications of peptides and their complexes (R-01)	30.09.2021	-
			Synthesis of new peptides, their characterization and study by specific techniques. In vitro and silico assays (R-02)	30.06.2022	-
			Peptide synthesis and their characterization by mass spectrometry, infrared spectroscopy and atomic force microscopy: biomedical applications (T)	29.07.2022	-
ZUBAS M. ANDREEA *PhD 2nd year*	Syntheses of chalcones and chalcone derivatives with special properties	1. Prof. PhD Elena BICU – **PhD coordinator** 2. Prof. PhD habil. Mihail-Lucian BIRSA 3. Assoc. Prof. PhD. Dalila BELEI 4. Assoc. Prof. PhD. Neculai-Catalin LUNGU	Syntheses of chalcones and chalcone derivatives with special properties (PR)	25.09.2020	25.09.2020 Very good
			Chalcones. Synthesis and biological action (R-01)	26.02.2021	29.01.2021 Very good
			Chalcone derivatives, analogs of fenstantine (R-02)	30.09.2021	-
			Syntheses of chalcones and chalcone derivatives with special properties (T)	29.07.2022	-
PhD students enrolled in the first year, academic year 2018-2019					
AMARANDEI M. CORNELIA *PhD 3rd year*	Chemical characterisation of secondary organic aerosols in ambient particulate matter from Iasi, north-eastern Romania	1. Prof. PhD habil. Cecilia ARSENE – **PhD coordinator** 2. Prof. PhD habil. Romeo Iulian OLARIU 3. Prof. PhD Ionel MANGALAGIU 4. Prof. PhD Aurel PUI	Chemical characterisation of secondary organic aerosols in ambient particulate matter from Iasi, north-eastern Romania (PR)	09.2019	19.09.2019 Very good
			Characterization of the organic fraction of urban particulate matter by determining SOA markers (R-01)	30.09.2020	24.09.2020 Very good
			Investigation of sources, formation processes	30.06.2021	-

			and impact of secondary organic aerosols in particulate matter (R-02)		
			Chemical characterisation of secondary organic aerosols in ambient particulate matter from Iasi, north-eastern Romania (T)	09.2021	-
NEGRU G. GEORGIANA *PhD 3rd year*	Synthesis of new azaheterocycles with special properties	1. Prof. PhD Elena BICU – **PhD coordinator** 2. Assoc. Prof. PhD. Dalila BELEI 3. Prof. PhD habil. Mihail-Lucian BIRSĂ 4. Assoc. Prof. PhD. Neculai-Catalin LUNGU	Synthesis of new azaheterocycles with special properties (PR)	09.2019	26.09.2019
			Pyrrole and derivatives. Representatives with biological action (R-01)	25.09.2020	25.09.2020 Very good
			Synthesis of pyrazoles via malononitrile derivatives (R-02)	23.12.2020	29.01.2021 Very good
			Synthesis of new azaheterocycles with special properties (T)	09.2021	-
PhD students enrolled in the first year, academic year 2017-2018					
BRADATAN V. LILIANA (căs. ONICIUC) *Extension of PhD studies -with fee*	Azaheterocyclic compounds with condensed nuclei. Synthesis, structure and properties	1. Prof. PhD IONEL MANGALAGIU – **PhD coordinator** 2. Prof. PhD Costel MOLDOVEANU 3. Lect. PhD Vasilichia ANTOCI 4. Prof. PhD habil. Romeo Iulian OLARIU	Salts and ilides with benzo{f}quinoline backbone (R)	09.2018	17.09.2018 Very good
			6-atom azaheterocyclic compounds with fused nuclei. Obtaining and properties (R-01)	31.08.2020	26.02.2021 Good
			Potential practical applications of 6-atom azaheterocyclic compounds with fused nuclei (R-02)	30.09.2020	-
			Azaheterocyclic compounds with condensed nuclei. Synthesis, structure and properties (T)	09.2020	-
RUSU M. ANA-MARIA *PhD pause for 2 years, starting with 1.10.2019, according to the approval of the BECA no. D17/26.09.2019*	Chemical degradation study of selected volatile organic compounds under simulated atmospheric conditions. Theoretical and practical approaches	1. Prof. PhD habil. ROMEO IULIAN OLARIU – **PhD coordinator** 2. Prof. PhD habil. CECILIA ARSENE 3. Lect. PhD Iustinian Gabriel BEJAN 4. Prof. PhD Ionel MANGALAGIU	Chemical degradation study of selected volatile organic compounds under simulated atmospheric conditions. Theoretical and practical approaches	09.2018	18.09.2018 Very good
			Analytical techniques and methods used in the study of chemical degradation of volatile organic compounds in the atmosphere (R-01)	09.2019	24.07.2019 Very good
			Theoretical study methods regarding the development of atmospheric degradation mechanisms of some	03.2020	-

			volatile organic compounds (R-02)		
			Chemical degradation study of selected volatile organic compounds under simulated atmospheric conditions. Theoretical and practical approaches	09.2020	-
SOROAGA G.V. LAURENTIU-VALENTIN *Extension, 1st year*	Applying optical and electronic spectral techniques to the identification and quantification of rare and refractory elements in the environment	1. Prof. PhD habil. ROMEO IULIAN OLARIU – **PhD coordinator** 2. Prof. PhD habil. Cecilia ARSENE 3. Assoc. Prof. PhD. Simona Maria CUCU-MAN 4. Lect. PhD Iustinian Gabriel BEJAN	Applying optical and electronic spectral techniques to the identification and quantification of rare and refractory elements in the environment (PR)	09.2018	18.09.2018 Very good
			Analytical techniques used in the identification and quantification of rare and refractory elements (R-01)	09.2019	19.09.2019 Very good
			Analysis of traces of rare and refractory elements in various environmental samples (R-02)	03.2020	16.09.2020 Very good
			Applying optical and electronic spectral techniques to the identification and quantification of rare and refractory elements in the environment (T)	09.2020	-
PhD students enrolled in the first year, academic year 2016-2017					
BRATANOVICI E. BOGDAN-IONEL *Extension, 2nd year*	New acetophenone derivatives with azaheterocycle framework	1. Prof. PhD IONEL MANGALAGIU – **PhD coordinator** 2. Prof. PhD Costel MOLDOVEANU 3. Assoc. Prof. PhD. Gheorghita ZBANCIOC 4. Lect. PhD Vasilichia ANTOCI	New acetophenone derivatives with azaheterocycle framework (PR)	09.2017	24.08.2017 Very good
			Acetophenone derivatives with azaheterocyclic backbone. Synthesis, structure, reactivity (R-01)	12.2018	06.12.2018 Good
			Properties (biological, opto-electronic) of acetophenone derivatives with azaheterocyclic backbone (R-02)	07.2019	09.09.2019 Very good
			New acetophenone derivatives with azaheterocycle framework (T)	09.2019	-
ROMAN C. CLAUDIU *Extension, 2nd year*	Atmospheric fate of hydroxylated aromatice compounds	1. Prof. PhD habil. ROMEO IULIAN OLARIU – **PhD coordinator** 2. Prof. PhD habil. Cecilia ARSENE	Atmospheric fate of hydroxylated aromatice compounds (PR)	09.2017	29.06.2017
			Analytical methods and techniques applied in the study of degradation of aromatic compounds	04.2018	18.09.2018 Very good

		3. Lect. PhD Iustinian Gabriel BEJAN 4. Prof. PhD Ionel MANGALAGIU	under simulated atmospheric conditions (R-01)		
			Study of atmospheric degradation mechanisms of aromatic compounds (R-02)	01.2019	06.06.2019 Very good
			Atmospheric fate of hydroxylated aromatice compounds (T)	09.2019	-
PhD students enrolled in the first year, academic year 2015-2016					
CHELARIU A. TUDOREL *Extension, 3nd year*	Theoretical and experimental studies concerning the fluorescence of some 5 and 6 member ring nitrogen heterocycles	1. Prof. PhD IONEL MANGALAGIU – **PhD coordinator** 2. Prof. PhD Costel MOLDOVEANU 3. Lect. PhD Vasilichia ANTOCI 4. Assoc. Prof. PhD. Ionel HUMELNICU	Synthesis and theoretical study of some benzoxazole and pyridine derivatives (PR)	09.2016	28.09.2016 Very good
			Benzoxazole derivatives. Synthesis, structure, properties. Theoretical and experimental studies (R-01)	07.2017	12.07.2017 Good
			Phenanthroline and pyridine derivatives. Synthesis, structure, properties. Theoretical and experimental studies (R-02)	01.2018	26.04.2018 Good/Very good
			Theoretical and experimental studies concerning the fluorescence of some 5 and 6 member ring nitrogen heterocycles (T)	09.2018	-
NECULA M. RADU *Extension, 3nd year*	Effects of metal mining residues on secondary metabolites of forest flora	1. Prof. PhD GABI DROCHIOIU – **PhD coordinator** 2. Assoc. Prof. PhD. Vasile-Robert GRADINARU 3. Assoc. Prof. PhD. Brindusa Alina PETRE 4. SR I PhD Elvira GILLE	Effects of metal mining residues on secondary metabolites of forest flora (PR)	09.2016	22.09.2016 Good
			Relationship of heavy metals with secondary metabolites of carotenoid, flavonoid, anthocyanin and terpenoid type (R-01)	10.2017	05.10.2017 Very good
			Variation of secondary metabolite content in some mountain species such as Satureja montana L. Under the action of heavy metals from mining residues (R-02)	01.2018	26.04.2018 Good/Very good
			Effects of metal mining residues on secondary metabolites of forest flora (T)	09.2018	-
PhD students enrolled in the first year, academic year 2014-2015					
ARSENE ELENA DANIELA (căs. CHITOIU-ARSENE)	Oxide compounds utilized in the present techniques	1. Prof. PhD MIRCEA NICOLAE	Oxide compounds utilized in the present techniques (PR)	09.2015	28.09.2015 Very good

Extension, 4th year		PALAMARU – **PhD coordinator** 2. Prof. PhD Alexandra IORDAN 3. Prof. PhD Aurelia VASILE 4. Assoc. Prof. PhD. Dumitru GANJU	Synthesis by sol-gel method of oxide compounds with chromium-based spinel structure (R-01)	05.2016	26.05.2016 Very good
			Structural characterization and study of the physical properties of oxide compounds with chromium-based spinel structure (R-02)	04.2017	25.04.2017 Very good
			Oxide compounds utilized in the present techniques (T)	09.2018	-
BUCUR STEFAN *Extension, 4th year*	-cyclodextrin: synthesis and applications	1. Prof. PhD IONEL MANGALAGIU – **PhD coordinator** 2. Assoc. Prof. PhD. Neculai Catalin LUNGU 3. Lect. PhD Vasilichia ANTOCI 4. Asist. PhD Dorina MANTU	-cyclodextrin derivatives. Application summary	09.2015	30.04.2015 Very good
			Functionalized -cyclodextrins: synthesis, characterization and applications (R-01)	06.2016	18.07.2016 Very good
			Molecular modeling studies in the class of cyclodextrons, advantages and challenges (R-02)	09.2016	22.12.2016 Very good
			-cyclodextrin: synthesis and applications (T)	09.2018	-

PR-project; R-01 - report 1; R-02 - report 2; T - thesis defended in front of the guiding committee

Recommendations: Throughout the entire doctoral training period, the PhD students from the Doctoral School of Chemistry at Alexandru Ioan Cuza University benefit from counseling and guidance from the members of the guidance commissions, this is reflected in written guidance and feedback or regular meeting.

The indicator is fulfilled.

Performance Indicator B.2.1.5*. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.* The ratio between the number of PhD students and the total number of supervising teachers/researchers in the Doctoral School of Chemistry at Alexandru Ioan Cuza University is 1.08:1 which is lower than the threeshold requested by the performance indicator. This assures a high devoted attention to the training and guidance of the PhD students.

Recommendations: The ratio between the number of PhD students and the total number of supervising teachers/researchers in the Doctoral School of Chemistry at Alexandru Ioan Cuza University is 1.08:1 which is lower than the threeshold requested by the performance indicator. This assures a high devoted attention to the training and guidance of the PhD students.

The indicator is fulfilled.

Criterion B.3. The results of doctoral studies and procedures for their evaluation.

The Doctoral School of Chemistry demostrates an educational effectiveness on the results of doctoral studies and procedures for their evaluation, including the training of the doctoral students on the research through presentations at scientific conferences, scientific publications, etc., and the engagement of a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the Chemistry domain. All performance indicators have been adequately fullfilled.

Standard B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

The Doctoral School of Chemistry demostrates an educational effectiveness on the training of the doctoral students on the research through presentations at scientific conferences, scientific publications, etc., including at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years, and a ratio of at least 1 between the number of presentations and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years). All performance indicators have been adequately fullfilled.

Performance Indicator B.3.1.1. *For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.*

The Doctoral School of Chemistry at Alexandru Ioan Cuza University complies the performance indicator because at least one paper in WoS with impact factor journal per doctoral student who has obtained a doctor's title within the past 5 years is published. Details are given in the table below.

For the 21 PhD students who have obtained the title of PhD in Chemistry in the last 5 years (since 2015), 63 papers are reported, they are detailed in Annex-81, 81-T of the Internal Assessment Report in which the list of papers and their abstracts from the PhD thesis for each student are included. However, for 5 students (HABASESCU V. Laura (married SOLOMON), ION I. Laura, DUMITRIU I. GINA-Mirabela, LUCESCU P. Liliana, and ZAHARIA I. Marius-Mihai) the information is not provided because the files were submitted to the Doctoral Office.

It should be mentioned that the number of papers in relevant journals with high impact factors is significant and the production of articles per defended PhD is notorius.

Year	Scientific articles published in WoS journals with impact factor	Scientific articles published in indexed journals without impact factor	Scientific articles published in BDI indexed journals	Scientific articles published in conference proceedings	Articles published in dictionaries and encyclopedias	Patents	Books and book chapters	National scientific events	International scientific events
2020	8	3	0	3	0	0	0	19	8
2019	14	0	1	3	0	1*	0 +5	35	18
2018	11	0	3	1	0	0	0	45	23
2017	7	1	1	1	0	0	1+1	29	17
2016*	-	-	-	-	-	-	-	-	-
2015*	-	-	-	-	-	-	-	-	-

* For 2016 and 2015, the information belonged to the Doctoral School of Chemistry and Life and Earth Sciences.

The International evaluator has selected the following 5 articles, they were selected according different fields in Chemistry and produced by different PhD advisors :

Pricope, G., Ursu, E.L., Sardaru, M., Cojocaru, C., Clima, L., Marangoci, N., Danac, R., Mangalagiu, I.I., Simionescu, B.C., Pinteala, M., Rotaru, A. Novel cyclodextrin-based pH-sensitive supramolecular host-guest assembly for staining acidic cellular organelles. Polymer Chemistry, 9, 968-975, 2018. IF : 5.342 -Q1

The preparation and characterization of a supramolecular host–guest inclusion complex between a fluorescent indolizinyl-pyridinium salt and β-cyclodextrin is reported. The formation of 1 : 1 and 1 : 2 species is reported. The novelty of the study relies on the absence of cytotoxicity, cellular permeability, long-lived intracellular fluorescence and selective accumulation within acidic organelles of the fluorescent indolizinyl-pyridinium salt/β-cyclodextrin inclusion complexes made them remarkable candidates for the intracellular labelling of acidic organelles (lysosomes or mitochondria). The proposed approach may also be valid for new toxic dyes capable of forming host–guest inclusion complexes with cyclodextrins.

Galon (Negru), A.G., Olariu, R.I., Arsene, C. Size-resolved measurements of PM2.5 water-soluble elements in Iasi, north-eastern Romania: Seasonality, source apportionment and potential implications for human health. Science of the Total Environment, 695, 133839, 2019. IF : 6.551 - Q1

The first size-resolved element measurements in the PM2.5 fraction collected throughout 2016 in the Iasi urban area in north-eastern Romania is reported, the concentrations of water-soluble elements (Ag, Al, As, B, Ba, Be, Bi, Cd, Co, Cu, Cr, Fe, Ga, Mg, Mn, Mo, Ni, Pb, Rb, Se, Sr, Te, Ti, U, V, Zn) were determined by inductively coupled plasma mass spectrometry. Several water-soluble heavy metals (Al, Fe, Zn, As, Cr, Pb) exhibit clear seasonal patterns with maxima over the cold season and minima over the warm season. Elements as Al, Fe, Mg, Zn, Ni, Mn, and Cu present the highest levels in the PM2.5 fraction, indicating significant contributions from soil-dust resuspension or brake lining and tires. Positive matrix factorization, concentration weighted trajectory and bivariate polar plot analyses were applied to the entire PM2.5 database. Based on relative concentrations of various elements, five factors associated with specific sources were identified, the most important contributions come from secondary formation of the ammonium sulfate and nitrate. An assessment investigation of non-carcinogenic and carcinogenic health risks revealed water-soluble arsenic and chromium (VI) as elements with the largest incremental carcinogenic risks.

Olaru, A.M., Marin, L., Morariu, S., Pricope, G., Pinteală, M., Tartau-Mititelu, L., Biocompatible chitosan based hydrogels for potential application in local tumour therapy. Carbohydrate Polymers, 179, 59-70, 2018. IF : 7.182 - Q1

A series of hydrogels based on chitosan polyamine and nitrosalicylaldehyde were prepared via dynamic covalent chemistry, by imination and transimination reactions towards ordered clusters which play the role of crosslinking nodes of the chitosan network. The hydrogelation mechanism has been proved through NMR and FTIR spectroscopy, X-ray diffraction and polarized light microscopy. The successful preparation of the hydrogels and their mechanical properties were further investigated using rheological measurements. By electron scanning microscopy, the hydrogels exhibited a

channels microstructure morphology which critically influenced their fast swelling by capillarity. The hydrogels cytotoxicity was explored in vitro on HeLa cancer cells and their biocompatibility was monitored in vivo by subcutaneous implantation on rats. The hydrogels proved good in vitro cytotoxicity on the HeLa cells and also in vivo biocompatibility in rats. Thus, these novel biomaterials promise to be suitable for local cancer therapy.

Virlan, C., Bulai, G., Caltun, O.F., Hempelmann, R., Pui, A. Rare earth metals' influence on the heat generating capability of cobalt ferrite nanoparticles. Ceramics International, 42, 10, 11958-11965, 2016. IF : 3.83 - Q1

The aim of the study is the synthesize and the assessing of the potential applications of rare earth doped cobalt ferrite nanoparticles in cancer treatment through hyperthermia. The synthesis of $CoFe_2$−xRE_xO4 (where RE=Yb, Dy, Gd and x=0.01–0.3) nanoparticlesd through the co-precipitation method is presented and evaluated in correlation with their heat generating capability. The phase separation for high rare earth content with the appearance of Gd_2O_3 and Dy_2O_3 secondary phases leads to unwanted changes in the nanoparticles' magnetic properties and the specific absorption rate. Magnetic and specific adsorption rate measurement suggest increases in saturation magnetization and SAR value in doped ferrites, as compared to $CoFe_2O_4$ for doped samples.

Drochioiu G., Ciobanu C. I., Bancila S., Ion L., Petre B. A., Andries C., Gradinaru R.V., Murariu M., Ultrasound-based protein determination in maize seeds. Ultrasonics Sonochemistry, 29, 93–103, 2016. IF: 6.513 - Q1

The need for a simple and accurate method for protein estimation in alcoholic extracts led to the reexamination of the optimum conditions of a colorimetric assay based on the biuret reaction. Sonication time and other experimental parameters were optimized after kinetics study on the extraction of either zein or total proteins. Zein extraction and purity were investigated by 1H and 13C NMR spectroscopy, SDS–PAGE electrophoresis, and UV–visible spectrophotometry (UV–vis). A zein assay was proposed, which involves the reaction of copper ions in copper phosphate powder with zein extracted in ethanolic solutions under strong alkaline environment. Furthermore, this procedure to determine total proteins in maize samples simultaneously with their ultrasonic-assisted (US) extraction with an alkaline–alcoholic solution was extended. The 545 nm absorbance of the violet-colored supernatants which is proportional to the protein content was found to be the key parameter of the improved biuret-based protein assay. Comparison of values obtained by this procedure and by Micro-Kjeldahl method was in excellent agreement. Enhanced accuracy and repeatability was found in protein determination in maize using the modified biuret method. The optimization of reagent concentrations and incubation times were studied as well.

All these papers have been published in reputed journals in their specific fields and the contributions by the PhD students is relevant and original, paying excellence to the advance of the knowledge and science at International level.

Recommendations: The Doctoral School of Chemistry at Alexandru Ioan Cuza University complies the performance indicator because at least one paper in WoS with impact factor journal per doctoral student who has obtained a doctor's title within the past 5 years is published. For the 21 PhD students who have obtained the title of PhD in Chemistry in the last 5 years, 63 papers are reported. The number of papers

in relevant journals with high impact factors is significant and the production of articles per defended PhD is notorius. All the selected 5 papers have been published in reputed journals in their specific fields (all with high impact factor and all in Q1 rank) and the contributions by the PhD students are relevant and original, paying excellence to the advance of the knowledge and science at International level.

The indicator is fulfilled.

Performance Indicator *B.3.1.2. *The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious International events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.*

The following table provides an overview of the contributions to national and International events by the PhD students of the Doctoral School of Chemistry at Alexandru Ioan Cuza University for 2020, 2019, 2018 and 2017; for 2016 and 2015, the information is centralized at the Doctoral School of Chemistry and Life and Earth Sciences. The table does not include data for AMARANDI ROXANA because she has completed her PhD internship at the University of Copenhagen and did not participate in conferences with the institutional affiliation of the "Alexandru Ioan Cuza" University of Iasi. A total of 43 contributions to International conferences and 86 contributions to national conferences is reported for the PhD students of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, this accounts for a ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) of 2.15 which substantially above the threeshold requested by the performance indicator (1).

PhD student's last and first name	Date of defense and OM confering PhD degree	Number of conference entries		Relevant contribution (link to International conference abroad)
		Internal.	Nat.	
1	2	3	4	5
CUCU D. Dumitrela (married DIACONU)	12.02.2021 In the process of validation by CNATDCU	9	7	www.iccesen.org https://online.fliphtml5.com/obhuf/ptyn/#p=19 https://biocoreconferences.com/chemistry-congress-2019/
SARDARU G.V. Monica-Cornelia	13.11.2020 O.M. 3252/09.02.2021	2	7	https://iupac.org/event/22-icos/ https://www.chemcys.be/
JURESCHI V. Monica (married IAVORSCHI)	21.10.2020 O.M. 6245/21.12.2020	4	4	https://www.sgem.org/ http://www.rsc.org/events/detail/37600/19th-International-multidisciplinary-scientific-geoconference-sgem-2019
LUPAESCU G. Ancuta-Veronica	26.02.2020 O.M. 4021/07.04.2020	2	5	https://www.sgem.org
GALON G. Alina-Giorgiana (married NEGRU)	25.09.2019 O.M. 5345/25.11.2019	2	12	https://www5.shocklogic.com/scripts/jmevent/programme.php?Client_Id=%27KONGRESS%27&Project_Id=%2719371%27&System_Id=1 https://www5.shocklogic.com/scripts/jmevent/programme.php?Client_Id=%27KONGRESS%27&Project_Id=%2719371%27&System_Id=1

TIRU T. Lacramioara-Elena (married POPOVICI)		26.09.2018 O.M. 5745/28.12.2018	2	5	https://organicchemistry.conferenceseries.com/europe/scientific-program	
OLARU M. Anda-Mihaela		27.07.2018 O.M. 5474/14.11.2018	1	7	http://emnmeeting.org/Europe/hydrogel-materials/ http://chem.asm.md/iccsrm	
UNGUREANU L. Iurie		27.02.2018 O.M. 4193/27.07.2018	-	-	-	
VIRLAN Constantin		21.07.2017 O.M. 5561/04.12.2017	1	0	http://www.photocatalysis-workshop.com/	
ANDRIES V. Claudia		11.03.2017 O.M. 4097/20.06.2017	6	5	http://www.affinityms.de/BRMS_II_Workshop_2016_Program_Final.pdf https://dgms.eu/de/bericht-48-dgms-jahrestagung-in-wuppertal/ https://www.shimadzu.de/LCMS-Systeme?pk_campaign=SEALCMS&pk_kwd=%2Bmassenspektrometer	
TUDORACHI C. Lucia		30.01.2017 O.M. 5745/28.12.2018	1	2	https://www.nature.com/natureevents/science/events/39267-16th_International_Multidisciplinary_Scientific_GeoConference_EXPO_SGEM2016	
BANCILA D. Sabina		20.12.2016 O.M. 3148/30.01.2017	1	5	http://www.aosr.ro/15th-International-balkan-workshop-on-applied-physics-and-materials-science/	
IFTIME V. Maria-Cristina (married AL-MATARNEH)		29.10.2016 O.M. 3148/30.01.2017	1	7	www.chem.uaic.ro/~cofrrocm-2014/	
MOISE E. Iuliana-Monica		30.09.2016 O.M. 3148/30.01.2017	1	1	-	
BAHRIN M. Lucian-Gabriel		28.09.2016 O.M. 5895/28.11.2016	-	-	-	
HABASESCU V. Laura (married SOLOMON)		23.05.2016 O.M. 4954/17.08.2016	1	7	http://www.iccmse.org/archives/ICCMSE2014/index.ht	
ION I. Laura		27.11.2015 O.M. 3209/23.02.2016	7	2	https://aip.scitation.org/toc/apc/1618/1?expanded=1618 http://www.goethe-university-frankfurt.de/en?legacy_request=1	
LUCESCU P. Liliana		30.09.2015 O.M. 5954/7.12.2015	1	1	-	
DUMITRIU I. Gina-Mirabela		30.09.2015 O.M. 5954/7.12.2015	1	2	-	
ZAHARIA I. Marius-Mihai		24.09.2015 O.M. 5954/7.12.2015	0	7	-	
PhD No:	**20**	-	43	86	**Ratio of col. 3 to col. 1**	**2.15**

Note: The situation in the table refers to 20 PhD students out of the 21 who defended their PhD thesis starting with 2015, the PhD student AMARANDI ROXANA carried out her PhD internship at the University of Copenhagen.

Recommendations: A total of 43 contributions to International conferences and 86 contributions to national conferences is reported for the PhD students of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, this accounts for a ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) of 2.15 which substantially above the threeshold requested by the performance indicator (1).

The indicator is fulfilled.

Standard B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

The Doctoral School of Chemistry demostrates an educational effectiveness on the engagement of a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the Chemistry domain, and the ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school does not exceed 0.3, considering the past five years. All performance indicators have been adequately fullfilled.

Performance Indicator *B.3.2.1. *The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.*

The table below shows the number of PhD theses of the Doctoral School of Chemistry at Alexandru Ioan Cuza University allocated to a specific reviewer from a higher education institution, other than the evaluated IOSUD. The number of doctoral theses allocated to one specialist coming from a higher education institution does not exceed two in a year for the theses coordinated by the same doctoral thesis advisor.

Academic year	PhD Coordinator	Reviewers	Affiliation	Number of evaluations for theses coordinated by the same coordinator/year
2015-2016	Prof. PhD DROCHIOIU Gabi	* Prof. PhD Marieta Costache	UB[1]	2
		*SR I PhD Ioan Seghedi	IGSS[2]	1
		Prof. PhD Ionel Mangalagiu	UAIC[3]	1
		*SR I PhD Ecaterina Stela Dragan	ICMPP[4]	1
		Prof. PhD Aurel Pui	UAIC[3]	1
2015-2016	Prof. PhD BARSA Mihail-Lucian	*PR I PhD Petru Filip	CCOCDN[5]	1
		* SR I PhD Mariana Pinteala	ICMPP[4]	1
		Assoc. Prof. PhD Neculai Catalin Lungu	UAIC[3]	1
2015-2016	Prof. PhD BICU Elena	* Prof. PhD Nicolae Hurduc	TUIASI[6]	1
		* Assoc. Prof. PhD Alina Ghinet	UCLLF[7]	1
		Prof. PhD habil. Mihail-Lucian Birsa	UAIC[3]	1
2016-2017	Prof. PhD MANGALAGIU Ionel	* SR I PhD Calin Deleanu	CCOCDN[5]	1
		* Prof. PhD Ion Grosu	UBBC[8]	1
		Assoc. Prof. PhD Costel Moldoveanu	UAIC[3]	1
2016-2017	Prof. PhD DROCHIOIU Gabi	* Prof. PhD Dan Cascaval	TUIASI[6]	2
		* Assoc. Prof. PhD Gheorghe Stoian	UB[1]	1
		Prof. PhD Aurel Pui	UAIC[3]	1
		* Prof. PhD Constantin Marutoiu	UBBC[8]	1
		Prof. PhD Ion Sandu	UAIC[3]	1
		* Prof. PhD Radu Iliescu	UMFGTP[9]	1

		* Assoc. Prof. PhD Ileana Farcasanu	UB[1]	1
		Assoc. Prof. PhD Robert Grădinaru	UAIC[3]	1
2016-2017	Prof. PhD PUI Aurel	* Prof. PhD emeritus Mircea Diudea	UBBC[8]	1
		* Prof. PhD Mette Marie Rosenkilde	UCD[10]	1
		Prof. PhD Ionel Mangalagiu	UAIC[3]	1
		* CM Academician Cristian Silvestru	UBBC[8]	1
		* Prof. PhD Eng. Daniel Sutiman	TUIASI[6]	1
		Assoc. Prof. PhD Nicoleta Cornei	UAIC[3]	1
2017-2018	Prof. PhD BOURCEANU Gelu	* SR I PhD Anton Airinei	ICMPP[4]	1
		*Academician Aurelian Gulea	AŞM[11]	1
		*Academician Tudor Lupascu	ICAŞM[12]	1
		Assoc. Prof. PhD Ionel Humelnicu	UAIC[3]	1
2017-2018	Prof. PhD MANGALAGIU Ionel	* Prof. PhD Eng. Csaba Paizs	UBBC[8]	1
		* SR I PhD Mariana Pinteala	ICMPP[4]	1
		Assoc. Prof. PhD. Costel Moldoveanu	UAIC[3]	1
		* Prof. PhD Eng. Mircea Darabantu	UBBC[8]	1
		* SR I PhD Călin Deleanu	CCOCDN[5]	1
		Assoc. Prof. PhD Gheorghita Zbancioc	UAIC[3]	1
2018-2019	Prof. PhD habil. ARSENE Cecilia	* Prof. PhD Andrei Medvedovici	UB[1]	1
		* Prof. PhD Eng. Gabriel Lucian Radu	UPB[13]	1
		Prof. PhD habil. Romeo-Iulian Olariu	UAIC[3]	1
2019-2020	Prof. PhD DROCHIOIU Gabi	*Assoc. Prof. PhD habil. Ileana Cornelia Farcasanu	UB[1]	1
		*Assoc. Prof. PhD Andrei Neamtu	UMFGTP[9]	1
		Assoc. Prof. PhD Robert-Vasile Gradinaru	UAIC[3]	1
2020-2021	Prof. PhD DROCHIOIU Gabi	*Assoc. Prof. PhD habil. Ileana Cornelia Farcasanu	UB[1]	1
		*Assoc. Prof. PhD Bogdan Nicolae Manolescu	UPB[13]	1
		Assoc. Prof. PhD Robert-Vasile Gradinaru	UAIC[3]	1
2020-2021	Prof. PhD MANGALAGIU Ionel	* Prof. PhD Andrei Medvedovici	UB[1]	1
		* Prof. PhD habil. Csaba Paizs	UBBC[8]	1
		Assoc. Prof. PhD Gheorghita Zbancioc	UAIC[3]	1
		* Prof. PhD Eng. Mircea Darabantu	UBBC[8]	1
		* SR I PhD habil. Luminita Marin	ICMPP[4]	1
		Prof. PhD Ramona Antoaneta Danac	UAIC[3]	1

[1]University of Bucharest; [2]„Sabba S. Stefanescu" Institute of Geodynamics, Romanian Academy, Bucharest; [3]„Alexandru Ioan Cuza" University of Iasi; [4]"Petru Poni" Institute of Macromolecular Chemistry, Iasi; [5]"Organic Chemistry Center" Costin D. Nenitescu Bucharest; [6]"Gheorghe Asachi" Technical University of Iasi; [7]Catholic University of Lille, France; [8]„Babeş-Bolyai" University of Cluj; [9]"Gr. T. Popa" University of Medicine and Pharmacy Iasi; [10]University of Copenhagen, Denmark; [11]Chisinau Academy of Sciences, Republic of Moldova; [12]Institute of Chemistry of the Academy of Sciences of Republic of Moldova; [13]University Politehnica of Bucharest.

Recommendations: The number of PhD theses of the Doctoral School of Chemistry at Alexandru Ioan Cuza University allocated to a specific reviewer from a higher education institution, other than the evaluated IOSUD does not exceed two in a year for the theses coordinated by the same doctoral thesis advisor.

The indicator is fulfilled.

Performance Indicator *B.3.2.2. *The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.*

The table below shows the ratio between the number of PhD theses of the Doctoral School of Chemistry at Alexandru Ioan Cuza University assigned to a given reviewer from another higher education institution than the one in which the PhD thesis is organized and the number of PhD theses defended in the doctoral field of Chemistry. The number of doctoral thesis presented within the past 5 years is higher than 10 and the ratio is 0.07-0.13 which does not exceed the threshold value given by the performance indicator (0.3).

LAST AND FIRST NAME OF THE REVIEWER	Teaching/scientific degree	Affiliation	Total number of theses assigned to a reviewer from another institution	The total number of theses defended in the last 5 academic years	RATIO No. theses assigned to an external reviewer and no. total of theses defended in the last 5 years
AIRINEI Anton	SR I PhD	ICMPP[4]	1	15	0,07
CASCAVAL Dan	Prof. PhD	TUIASI[6]	2	15	0,13
COSTACHE Marieta	Prof. PhD	UB[1]	2	15	0,13
DARABANTU Mircea	Prof. PhD Eng.	UBBC[8]	1	15	0,07
DELEANU Călin	SR I PhD	CCOCDN[5]	2	15	0,13
DIUDEA Mircea	Prof. PhD emeritus	UBBC[8]	1	15	0,07
DRAGAN Ecaterina Stela	SR I PhD	ICMPP[4]	1	15	0,07
FARCASANU Ileana Cornelia	Assoc. Prof. PhD habil.	UB[1]	2	15	0,13
FILIP Petru	PR I PhD	CCOCDN[5]	1	15	0,07
GHINET Alina	Assoc. Prof. PhD	UCLLF[7]	1	15	0,07
GROSU Ion	Prof. PhD	UBBC[8]	1	15	0,07
GULEA Aurelian	Academician	AŞM[11]	1	15	0,07
HURDUC Nicolae	Prof. PhD	TUIASI[6]	1	15	0,07
ILIESCU Radu	Prof. PhD	UMFGTP[9]	1	15	0,07
LUPASCU Tudor	Academician	ICAŞM[12]	1	15	0,07
MĂRUTOIU Constantin	Prof. PhD	UBBC[8]	1	15	0,07
MEDVEDOVICI Andrei	Prof. PhD	UB[1]	1	15	0,07
NEAMTU Andrei	Assoc. Prof. PhD.	UMFGTP[9]	1	15	0,07
PAIZS Csaba	Prof. PhD Eng. Habil.	UBBC[8]	1	15	0,07
PINTEALA Mariana	SR I PhD	ICMPP[4]	2	15	0,13
RADU Gabriel Lucian	Prof. PhD Eng	UPB[13]	1	15	0,07
ROSENKILDE Mette Marie	Prof. PhD	UCD[10]	1	15	0,07
SEGHEDI Ioan	SR I PhD	IGSS[2]	1	15	0,07
SILVESTRU Cristian	CM Academician	UBBC[8]	1	15	0,07

STOIAN Gheorghe	Assoc. Prof. PhD	UB[1]	1	15	0,07
SUTIMAN Daniel	Prof. PhD Eng.	TUIASI[6]	1	15	0,07

[1] University of Bucharest; [2] „Sabba S. Stefanescu" Institute of Geodynamics, Romanian Academy, Bucharest; [3] „Alexandru Ioan Cuza" University of Iasi; [4] "Petru Poni" Institute of Macromolecular Chemistry, Iasi; [5] "Organic Chemistry Center" Costin D. Nenitescu Bucharest; [6] "Gheorghe Asachi" Technical University of Iasi; [7] Catholic University of Lille, France; [8] „Babeş-Bolyai" University of Cluj; [9] "Gr. T. Popa" University of Medicine and Pharmacy Iasi; [10] University of Copenhagen, Denmark; [11] Chisinau Academy of Sciences, Republic of Moldova; [12] Institute of Chemistry of the Academy of Sciences of Republic of Moldova; [13] University Politehnica of Bucharest.

Recommendations: The number of PhD theses of the Doctoral School of Chemistry at Alexandru Ioan Cuza University assigned to a given reviewer from another higher education institution than the one in which the PhD thesis is organized and the number of PhD theses within the past 5 years defended in the doctoral field of Chemistry is 0.07-0.13 which does not exceed the threshold value given by the performance indicator (0.3). The number of defended PhDs is higher than 10.

The indicator is fulfilled.

Domain C. QUALITY MANAGEMENT

The Doctoral School of Chemistry demostrates an adequate quality management based on the existence and periodic implementation of the internal quality assurance system, transparency of information and accessibility of learning resources, and Internationalization. All performance indicators have been adequately fullfilled.

Criterion C.1. Existence and periodic implementation of the internal quality assurance system

The Doctoral School of Chemistry demostrates the existence and periodic implementation of the internal quality assurance system that includes an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance, and mechanisms implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program. All performance indicators have been adequately fullfilled.

Standard C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

The Doctoral School of Chemistry quality is expected to be enhanced by coherent actions undertaken at the level of the doctoral school, at institutional level and in partnership activities. The parties directly interested in the quality assurance process in the Doctoral School of Chemistry are especially those related to the PhD coordinators and the PhD students. Yearly, the Doctoral School of Chemistry carries out an internal quality evaluation report. Evidences for the period 2014-2020 are given in the Internal Evaluation Report. The quality assessment considers the following criteria :

a) the scientific activity of the doctoral coordinators reflected by the results generated together with the coordinated PhD students.

b) the infrastructure and logistics necessary for carrying out the research activity within the Doctoral School of Chemistry in the Evaluation Reports made at the end of each calendar year.

c) the regulations and procedures governing the PhD studies (Rules and regulation for the organisation of the doctoral schools and of the IOSUD-UAIC, Rules and regulations for PhD students admission; Rules and regulation for the completion of the doctoral university studies.

d) the scientific activity of the PhD students (updated information regarding the scientific activity of the PhD students from the Doctoral School of Chemistry are continuously presented in the Evaluation Reports made at the end of each calendar year.

e) the training program based on advanced university studies of PhD students including the training program based on advanced university studies (PPUA) and b) the scientific research program (PCS), completed by the PhD thesis.

f) social and academic support services (including participation in various events, publication of articles, etc.) and advisory services provided to PhD students via the Service for Students, Career Guidance and Professional Insertion and Alumni.

At the level of the Doctoral School of Chemistry from IOSUD-UAIC, template formats have been proposed for the feedback sheets for evaluating the degree of the PhD students satisfaction. The feedback sheet template has been agreed following PhD students debates and the final form was adopted within the Doctoral school. The questionnaires are applied to the PhD students of the first, second and third year and also to those in extended period. The management of the documents related to the evaluation process is performed by the representative of the PhD students in the Doctoral School Council, PhD Student Claudiu ROMAN. In the future, the questionnaires will be applied to all PhD students enrolled in the doctoral study program. The synthetic report with the results obtained from the analysis of the feedback sheets and the PhD students possible proposed measures for the improvement of the academic and administrative services are also presented in the Internal evaluation report.

Performance Indicator C.1.1.1. *The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:*

(a) the scientific work of Doctoral advisors;

(b) the infrastructure and logistics necessary to carry out the research activity;

(c) the procedures and subsequent rules based on which doctoral studies are organized;

d) the scientific activity of doctoral students;

e) the training program based on advanced academic studies of doctoral students;

f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.

Internal quality assurance procedures are implemented at the Doctoral School of Chemistry at Alexandru Ioan Cuza University, including specific measurements of the scientific work of Doctoral advisors and the quality management and promotion of professional ethics and deontology. Annually, the PhD coordinators submit on time the individual self-assessment sheets in full compliance with the information in the Regulations for the recruitment, evaluation and promotion of teaching and research staff and the general evaluation sheet of university standards. The results of the annual evaluations of the PhD advisors of the Doctoral School of Chemistry of IOSUD-UAIC for indicator I, Research activity (70%) + teaching activity (30 %) are summarized in the table below, they are satisfactory.

Calendar year	Prof. ARSENE	Prof. BICU	Prof. BIRSA	Prof. DROCHIOIU	Prof. MANGALAGIU	Prof. OLARIU	Prof. PUI
Total score criterion I weighted with 70% of the research activity and 30% of the teaching activity							
2020	1828	*	320	*	817	2265	1614
2019	1092	597	662	*	1080	1738	804
2018	1353	513	279	857	180	1607	660
2017	986	464	987	925	1293	1188	688

Note: * teachers for whom the annual evaluation was not performed (age> 65 years)

The assessment process also considers if PhD coordinators of the Doctoral School of Chemistry have International visibility in the last five years, as evidenced by: membership in the scientific committees of International publications and conferences; membership in the boards of International professional associations; the quality of invited guest in conferences or group meetings of experts held abroad or the quality of member of some commissions for the defence of PhD theses at foreign universities or in co-supervision with a foreign university. The following table summarizes the results obtained from the assessments of the PhD coordinators of the Doctoral School of Chemistry that shows the full fullfilment by all of them, except for one which is partially fullfilled because the minimum cumulative impact factor in publications as principal author (first author and correspondent) is lower than 50.

No.	PhD coordinator	Criterion of Order no. 6129 published in the Official Journal of Romania 448/20.12.2016						Degree of fulfilment
	Required by O.M.	**N_{max}**	**FIC**	**FIC_D**	**FIC_{AP}**	**FIC_{AC}**	**h_{index}**	
		50	**100**	**70**	**50**	**25**	**13**	
1	Prof. PhD habil. ARSENE Cecilia	50	192.781	192.781	72.539	54.703	16	Fulfiled
2	Prof. PhD BICU Elena	50	125.349	125.349	52.572	40.177	16	Fulfiled
3	Prof. PhD habil. BIRSA Mihail Lucian	50	125.650	125.650	86.411	81.254	23	Fulfiled
4	Prof. PhD DROCHIOIU Gabi	50	119.960	119.960	90.96	86.80	19	Fulfiled
5	Prof. PhD MANGALAGIU Ionel	50	173.27	144.62	89.76	76.85	27	Fulfiled
6	Prof. PhD habil. OLARIU Romeo-Iulian	50	197.670	197.67	*36.54*	25.74	19	Partially fulfiled
7	Prof. PhD PUI Aurel	50	143.37	100.257	76.000	71.304	17	Fulfiled

The h_{index} criterion is presented according to the Scopus database.

Note: The PhD coordinators from the Doctoral School of Chemistry at IOSUD-UAIC have published more than 50 articles in the scientific activity of their subjects. Only the 50 articles that ensure the fulfilment of the criteria within the evaluation field are included in the evaluation sheets.

(*) N_{max}: the first maximum N papers, organized in descending order of the impact factors of the journals in which they were published;

(**) FIC: the minimum cumulative impact factor of the journals in which the papers in question were published;

(***) FIC_D: the minimum cumulative impact factor of publications in the declared research fields;

(****) FIC_{AP}: the minimum cumulative impact factor in publications as principal author (first author and correspondent);

(*****) FIC_{AC}: the minimum cumulative impact factor in publications as correspondent;

(b) the infrastructure and logistics necessary to carry out the research activity.

The infrastructure and logistics necessary to carry out the research activity of the Doctoral School of Chemistry from IOSUD-UAIC are adequate and the monitoring, evaluation and continuous development of the internal quality assurance system is also adequate.
The students from the Doctoral School of Chemistry have access to classrooms, amphitheatres, seminar rooms, laboratories, whose capacity is in compliance with the regulations in force. In performing the experimental activities, PhD students have access to advanced analysis and calculation techniques. For curricular and extracurricular activities, they have access to multimedia systems and other resources related to the good development of the approved activities, and laboratories properly equipped. The PhD students from the Doctoral School of Chemistry have at their disposal, through the 13 branches of the "Mihai Eminescu" Central University Library of Iasi (BCU), a book repository, specialized magazines and periodicals. Through the partnerships concluded at institutional level with the French Cultural Centre, the British Council, the German Cultural Centre, the PhD students can borrow books and participate in all cultural actions undertaken by all participant institutions.
The members of the academic community from the Doctoral School of Chemistry are permanently concerned with the purchase of specific equipment (computers, laptops, printers and multifunctional, Xerox units, video projectors, retro projectors, laboratory equipment) to be installed in the rooms allocated to the teaching-learning process and laboratory investigations.
Within the university, the PhD students can have access to the sports complex with gymnasiums, running track, stadium, indoor gym. Both students and employees receive free medical services in the own medical offices.
Modern infrastructures, suitable for advanced, frontier, fundamental and applied research, from the CERNESIM Center but also from other research laboratories in the field of Chemistry are registered on the page of the National Register of Research Infrastructures (ERRIS - Engage in the Romanian Research Infrastructures System). The ERRIS platform offers the possibility to know the public and private research infrastructures in Romania, stimulating partnerships and enrolment in national and International networks involved in research-development-innovation (RDI) activities. As interdisciplinary training and research centres/platforms/laboratories to which PhD students have access the following : CERNESIM, RAMTECH, ARHEOINVEST Platform, MEDIAEC Platform, and AMON Platform.
The list of the main equipments that can be accessed by PhD students from the Doctoral School of Chemistry, have ben described in the section of this report devoted to the Performance Indicator A.2.1.1.

(c) the procedures and subsequent rules based on which doctoral studies are organized.

The Doctoral School of Chemistry of IOSUD-UAIC for the organization of doctoral university studies works in accordance with the procedures, regulations and methodologies in force.

d) the scientific activity of doctoral students.

The scientific activity of PhD students in the Doctoral School of Chemistry of IOSUD-UAIC is continuously monitored based on the individual evaluation sheets, submitted at the end of each calendar year, both in order to identify the needs and in relation to the needs to take remedial measures and to centralize the information in the evaluation reports for the activity of SDC from IOSUD-UAIC.
Another important mechanism for identifying the need to take measures that can improve the quality of scientific activity of the PhD students of the Doctoral School of Chemistry of IOSUD-UAIC derives from the monitoring of the quality of PhD theses defended by PhD students of the Doctoral School of Chemistry of IOSUD-UAIC, and the verification of the percentage of similarity of the PhD theses defended by PhD

students from the Doctoral School of Chemistry. The information resulting from the monitoring of the scientific activity of the PhD students has been addressed in the analysis of the performance indicators B.3.1.1 and B.3.1.2.
The procedures for monitoring the scientific activity of doctoral students of the Doctoral School of Chemistry of IOSUD-UAIC are adequate.

e) the training program based on advanced academic studies of doctoral students.

The training program of the PhD students of the Doctoral School of Chemistry of IOSUD-UAIC includes the training program based on advanced university studies (PPUA) and the scientific research program (PCS). These two components are ensuring the scientific training of the PhD students by developing professional and transversal skills specific to the field of Chemistry. Evidences on the way in which, during the entire duration of the doctoral training stage, the PhD students in the field of Chemistry benefit from the advising/guidance of functional guidance commissions, in order to ensure their academic background, are as follows :

a) Situations related to the PPUA and PCS files for PhD students in internship and in extension updated until 2021.
b) Situations related to the minutes concluded at the meeting of the guidance commissions members within the activities of the PCS for PhD students in internship and in extension updated until 2021.
c) Situations related to the PPUA and PCS sheets for graduates updated until 2021.
d) Situations related to the minutes concluded at the meeting of the guidance commissions members within the activities of the PCS for graduates updated until 2021.
e) Situations related to the PPUA and PCS sheets for excluded PhD students updated until 2021.
f) Situations related to the minutes concluded at the meeting of the members of the guidance commissions within the activities of the PCS for expelled doctoral students updated until 2021.

f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.

The operational procedure establishes the way of internal evaluation of the doctoral schools and of the fields of doctoral university studies in order to get accreditation and periodically to evaluate themselve according to the Methodology of evaluation of doctoral university studies elaborated in full compliance with the legislation in force. The application of the procedure is materialized in the form of periodic reports made at the doctoral school level. Through the institutional set of Rules and regulations for the organization and functioning of doctoral university studies, internal quality assurance policies are established, which are applied at the level of all doctoral schools in UAIC.
The participation of the stakeholders in the quality assurance process is carried out by the social and academic support services (including participation in various events, publication of articles, etc.) and advisory services provided to PhD provided by the Service for Students, Career Guidance and Professional Insertion and Alumni, a structure subordinated to the Vice-Rectorate for student activities and partnerships with the economic environment. This service is concerned with providing career advising, psychological, free personal and professional development workshops, support in preparation for employment and the possibility to participate free of charge in career events - job fairs, volunteering and internships, networking with employers, company presentations. The service is also handling the survey on students' opinions regarding university services, through satisfaction questionnaires and conducting studies on employability of UAIC graduates. The reports of the mentioned Service refer to the

insertion, student satisfaction and partnerships; Research report - Employers expectations in the N-E area regarding the competencies of UAIC graduates and collaboration with the university environment; and Research report - Graduates of the "Alexandru Ioan Cuza" University of Iasi and the labor market. Study on the expectations of employers from future employees and graduates from future employers. Some plan of actions for ameliorating deficiencies identified through questionnaires applied to assess the services of the Doctoral School of Chemistry (through PhD student feedback sheets) and the Plan of proposed actions are proposed.

The internal quality assurance system of the Doctoral School of Chemistry of IOSUD-UAIC also considers the access to financial resources through research projects involving PhD students and the development of collaboration or bilateral agreements, they are summarized in the following tables.

Number of MEC grants, UAIC grants, institutional grants, within the doctoral field of Chemistry, reference date - start date of the academic year.

Academic year	Number of MEC grants for Romanian PhD students in internships	Number of grants for Romanian ethnic PhD students, scholarship holders of the Romanian state	Number of UAIC grants for Romanian PhD students in internships	Number of institutional grants	TOTAL number
2020-2021	11	-	1	-	12
2019-2020	8	-	1	4**	13
2018-2019	11	-	1	-	12
2017-2018	12	-	2	-	14
2016-2017	15	1	1	-	17
2015-2016	10	1	-	8*	19

** from which:

- ✓ 4 PhD students enrolled in POCU/380/6/13/123623 Project "PhD students and postdoctoral researchers prepared for the labour market!". According to the financial support contract granted by the project, art. 4 (3) *"Entrepreneurial doctoral scholarship will be able to be granted to those students who already receive the doctoral scholarship from the state budget, this scholarship co-financed from POCU 2014-2020 being a form of stimulating entrepreneurial skills, respectively the employability of doctoral/postdoctoral graduates"*

* from which:

- ✓ 5 PhD students enrolled in the POSDRU/187/1.5/S/155397 Project "Through doctoral scholarships to a new generation of elite researchers"
- ✓ 2 PhD students enrolled in the POSDRU/159/1.5./S/137750 Project "Doctoral and postdoctoral programs - support for increasing the competitiveness of research in the field of Exact Sciences"
- ✓ 1 PhD student enrolled in the POSDRU/159/1.5/S/133652 Project "Integrated system for improving the quality of doctoral and postdoctoral research in Romania and for promoting the role of science in society".

Recommendations: The Doctoral School of Chemistry at Alexandru Ioan Cuza University have demonstrated the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD. The following assessed criteria have been adequately described : (a) the scientific work of Doctoral advisors; (b) the infrastructure and logistics necessary to carry out the research activity; (c) the procedures and subsequent rules based on which doctoral studies are organized; d) the scientific activity of doctoral students; e) the training program based on advanced academic studies of doctoral students; and f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.

The indicator is fulfilled.

Performance Indicator *C.1.1.2. *Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.*

At the level of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, templates have been proposed for the feedback sheets for evaluating the degree of the PhD students satisfaction. The feedback sheet template has been agreed following PhD students debates and the final form was adopted within the Doctoral school. The questionnaires are applied to the PhD students of the first, second and third year and also to those in extended period. The management of the documents related to the evaluation process is performed by the representative of the PhD students in the Doctoral School Council, PhD Student Claudiu ROMAN. In the future, the questionnaires will be applied to all PhD students enrolled in the doctoral study program. The synthetic report with the results of the analysis of the feedback sheets and the PhD students proposed measures for the improvement of the academic and administrative services is given in the following table.

Synthetic report with the results obtained following the analysis of feedback forms completed by PhD students in stage or in the extended period.

Indicator	Average results and standard deviations	Average
	Academic year 2020/2021	Academic year 2018/2019
How do you appreciate the admission contest within the Doctoral School of Chemistry?	4.40±0.48	4.5
How do you appreciate the teaching activities within the Advanced University Training Program (PPUA)?	4.00±0.00	4.5
To what extent do you consider the disciplines studied within the PPUA relevant for your activity?	3.60±0.72	4.5
To what extent do you consider the existence in the PPUA of a discipline that addresses ethics in scientific research and intellectual property to be relevant?	4.00±0.4	5.0
How do you appreciate the evaluation process of PhD students within the PPUA?	4.40±0.48	5.0
How do you appreciate the access of the PhD students to the necessary information provided by the Doctoral School (regulations, legislation, procedures, forms, documents, indication of academic mobility, indication of publication opportunities, scholarships, conferences, etc.)?	4.13±0.71	4.57
How do you appreciate your collaboration with the PhD coordinator (setting research topics, stimulating research progress, etc.)?	4.50±0.53	4.71
How do you appreciate the involvement of the guidance committee members in carrying out your scientific activity?	4.44±0.60	4.71
How do you appreciate your collaboration with the administrative staff of the PhD school?	4.50±0.59	4.78
How do you appreciate the research resources and conditions provided by the PhD school?	2.94±0.75	3.79
How do you appreciate the access to mobilities abroad within the doctoral school?	4.06±0.75	4.07

To what extent do you consider that the facilities in the laboratories in which you operate meets your needs (research infrastructure, necessary consumables, etc.)?	3.75±0.92	3.64

(1- very bad; 2-bad; 3-medium; 4-good; 5-very good) - Only for PhD students enrolled in the first year of doctoral studies.

The results of the analysis of the measures proposed by PhD students from the Doctoral School of Chemistry at IOSUD-UAIC for the improvement of the academic and administrative services offered, applicable for a series of indicators for which averages lower than 4.5 were obtained, are given in the following table. The aspects to be improved deal with the need of a stock of materials/consumables at the university, the speeding of the acquisition process and the mobility of the students.

Measures proposed by the PhD students from the Doctoral School of Chemistry from IOSUD-UAIC for the improvement of the academic and administrative services offered, applicable for a series of indicators for which averages lower than 4.5 have been obtained.

Indicator	Academic year	Proposed measures for the improvement of the indicator
How do you appreciate the research resources and conditions provided by the PhD school? (no. 10)	2020/2021	Modification of the acquisition procedure. The need to purchase high-performance equipment. Creation of a materials warehouse within the Faculty/University to shorten the waiting time (currently between 6 and 18 months) for the reagents and materials needed in research.
	2018/2019	Supplying with equipments, consumables and reagents in order to improve and optimize the research conditions and the working environment existing in the Doctoral School of Chemistry.
How do you appreciate the access to mobilities abroad within the doctoral school? (no. 11)	2020/2021	Concluding collaborations between doctoral schools/universities in order to facilitate the change of experience.
	2018/2019	Improving the methods of informing PhD students about mobilities abroad within the Doctoral School of Chemistry, as well as providing support for taking the necessary steps to access them.
To what extent do you consider that the facilities in the laboratories in which you operate meets your needs (research infrastructure, necessary consumables, etc.)? (no. 12)	2020/2021	A more efficient and fast acquisition process focused on the needs of the PhD student. Creating a materials warehouse within the Faculty/University to shorten the waiting time (currently between 6 and 18 months) for the reagents and materials needed in research.
	2018/2019	Supplying with equipment, consumables and reagents in order to improve and optimize the research conditions in the laboratories where the PhD students work. The increase of the budget allocated for the purchase of consumables and reagents for the PhD students from the Doctoral School of Chemistry would lead to the improvement of the research conditions.

Recommendations: At the level of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, templates have been proposed for the feedback sheets for evaluating the degree of the PhD students satisfaction. The feedback sheet template has been agreed following PhD students debates and the final form was adopted within the Doctoral school. The questionnaires are applied to the PhD students of the first, second and third year and also to those in extended period. In the future, the questionnaires will be applied to all PhD students enrolled in the doctoral study program. The results of the analysis of the measures proposed by PhD students from the Doctoral School of Chemistry for the improvement of the academic and administrative services offered, are applicable for a series of indicators for which averages lower than 4.5 were considered. The aspects to be improved deal with the need of a stock of materials/consumables at the university, the speeding of the acquisition process and the mobility of the students.

The indicator is fulfilled.

Criterion C.2. Transparency of information and accessibility of learning resources

The Doctoral School of Chemistry demostrates an adequate transparency of information and accessibility of learning resources based on the information of interest to doctoral students, future candidates and public interest information for electronic format consultation, and the access to the resources needed by the students for conducting their doctoral studies. All performance indicators have been adequately fullfilled.

Standard C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

The Doctoral School of Chemistry demostrates an adequate transparency of information and accessibility of learning resources based on the information of interest to doctoral students, future candidates and public interest information for electronic format consultation that considers the publicizing in the website of the university. The performance indicator has been adequately fullfilled.

Performance Indicator C.2.1.1. *The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:*

(a) the Doctoral School regulation.

(b) the admission regulation;

(c) the doctoral studies contract;

(d) the study completion regulation including the procedure for the public presentation of the thesis;

(e) the content of training program based on advanced academic studies;

(f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;

(g) the list of doctoral students within the domain with necessary information (year of registration; advisor);

(h) information on the standards for developing the doctoral thesis;

(i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

Information of interest to PhD candidates and information of public interest are available on the University's website and on the website of the Doctoral Schools, https://www.chem.uaic.ro/ro/doctorat/.

a) doctoral school regulation;
https://www.chem.uaic.ro/ro/doctorat/regulament_doctorat.html
http://www.uaic.ro/despre-uaic/documentele-universitatii/

b) the admission regulation;
https://www.chem.uaic.ro/ro/doctorat/admitere-doctorat.html

c) the PhD studies contract;
https://www.chem.uaic.ro/ro/doctorat/formulare-doctorat.html

d) the regulation for completing the studies, which should also include the procedure for public defense of the thesis;

http://www.chem.uaic.ro/files/File/2017-2018/doctorat/regulamente/finalizare-studii-doctorale-extras-din-regulament-sd-chimie.pdf
https://www.chem.uaic.ro/ro/doctorat/regulament_doctorat.html

e) the content of the study programs;
https://www.chem.uaic.ro/ro/doctorat/ppua-planuri-fise.html
https://www.chem.uaic.ro/ro/doctorat/orar-ppua-20-21.html
https://www.chem.uaic.ro/ro/doctorat/programare-ex-ppua-2020-2021-sem1.html
https://www.chem.uaic.ro/ro/doctorat/sustineri-rapoarte-cercetare.html

f) the scientific profile and interest areas/research topics of the PhD coordinators in the field, as well as their institutional contact data) the list of PhD students in the field with the basic information (year of registration; coordinator)
https://www.chem.uaic.ro/ro/doctorat/conducatoridoc.html
https://www.chem.uaic.ro/ro/doctorat/cv-en.html
https://www.chem.uaic.ro/ro/doctorat/tabele-doctoranzi.html

g) information about the standards for the elaboration of the PhD thesis;
https://www.chem.uaic.ro/files/File/2020-2021/doctorat/regulamentul-iosud-drd-inmatriculati-in-an-i-2020-2021-r.pdf
https://www.chem.uaic.ro/files/File/2019-2020/doctorat/regulament-iosud-seria-2019-2022.pdf
http://www.chem.uaic.ro/files/File/2018-2019/doctorat/regulament-doctorat---iosud-iunie-2018.pdf
http://www.chem.uaic.ro/files/File/2017-2018/doctorat/regulamente/regulament-iosud-incepand-cu-2017-2018.pdf

h) links to the summaries of the PhD theses to be defended publicly, as well as the date, time, place where they will be defended, at least 20 days before the defense
https://www.chem.uaic.ro/ro/doctorat/sustineri-teze.html

Recommendations: The IOSUD of Alexandru Ioan Cuza University publishes on the website the following information : the Doctoral School regulation; (b) the admission regulation; (c) the doctoral studies contract; (d) the study completion regulation including the procedure for the public presentation of the thesis; (e) the content of training program based on advanced academic studies; (f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data; (g) the list of doctoral students within the domain with necessary information (year of registration; advisor); (h) information on the standards for developing the doctoral thesis; (i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

The indicator is fulfilled.

Standard C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

The Doctoral School of Chemistry demostrates an adequate transparency of information and accessibility of learning resources based on the access to the resources needed by the students for conducting doctoral studies, the access of the students to an electronic system for verifying the degree of similarity with other existing scientific works, and the access to scientific research laboratories or other facilities within the Doctoral School. All performance indicators have been adequately fullfilled.

Performance Indicator C.2.2.1. *All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.*
The "Alexandru Ioan Cuza" University of Iasi offers to the PhD students the opportunity to access the following databases: Science Direct Freedom Collection, Scopus, SciFinder (CAS), MathSciNet, etc., while through the “Mihai Eminescu" Central University Library in Iasi. The students also have access to other databases, such as: SpringerLink Journals, ProQuest Central, Emerald Journals, Science Journals, Thompson Reuters, Oxford Journals, SAGE Journals HHS Collection, EBSCO, Wiley Journals etc. Moreover, for a number of existing equipment within the CERNESIM Center, with which the Doctoral School of Chemistry has concluded a collaboration agreement, a series of dedicated software and databases exists. Evidences of the access of the PhD students to platforms providing academic databases relevant to the doctoral studies domain of their thesis are provided in the Internal Evaluation Report.

Recommendations: The "Alexandru Ioan Cuza" University of Iasi offers to all PhD students the opportunity to access the following databases: Science Direct Freedom Collection, Scopus, SciFinder (CAS), MathSciNet, etc., while through the “Mihai Eminescu" Central University Library in Iasi. All PhD students also have access to other databases, such as: SpringerLink Journals, ProQuest Central, Emerald Journals, Science Journals, Thompson Reuters, Oxford Journals, SAGE Journals HHS Collection, EBSCO, Wiley Journals etc. Moreover, for a number of existing equipment within the CERNESIM Center, with which the Doctoral School of Chemistry has concluded a collaboration agreement, a series of dedicated software and databases exists.

The indicator is fulfilled.

Performance Indicator C.2.2.2. *Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.*
The “Alexandru Ioan Cuza" University of Iasi has purchased the Turnitin application - an electronic system for checking the degree of similarity with other existing scientific or artistic creations. Through the application, the access of all the academic staff from the University, and implicitly of the PhD coordinators and the PhD students is assured. The students can use the afore mentioned application with the consent of the PhD coordinator. Evidences of the access of the PhD students to the electronic system for checking the degree of similarity with other creations are provided in the Internal Evaluation Report.

Recommendations: The “Alexandru Ioan Cuza" University of Iasi has purchased the Turnitin application - an electronic system for checking the degree of similarity with other existing scientific or artistic creations. Through the application, the access of all the academic staff from the University, and implicitly of the PhD coordinators and the PhD students is assured. The students can use the afore mentioned application with the consent of the PhD coordinator.

The indicator is fulfilled.

Performance Indicator C.2.2.3. *All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.*

For the research infrastructure in the laboratories there is a continuous concern from the PhD coordinators of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in the updating the instrumentation. Detailed analysis have been given in the performance indicators A.2.1.1, A.2.1.2 and A.2.1.3 of this report. The table below details the list of laboratories used by the PhD students (12 in stage) and SDC member coordinators of the Doctoral School of Chemistry Alexandru Ioan Cuza University (CERNESIM equipments are not included).

List of laboratories used by the PhD students (12 in stage) and SDC member coordinators from IOSUD-UAIC, Faculty of Chemistry.

No.	Indicator	Room code-number	Arranged space	Surface (m^2)	Situation/coordinator/PhD student		
					Coordinator	No. of PhD students in stage	Equipment (from Table 1.3)
1	Faculty of Chemistry (ground floor), Building A, 11 Carol I, 700506 Iasi	LC-10	Instrumental analysis and analytical chemistry laboratory (LAICA)	74.00	Prof. ARSENE	3	48, 92÷96*
					Prof. OLARIU	1	43÷47, 97÷100*
2	Faculty of Chemistry (ground floor), Building A, 11 Carol I, 700506 Iasi	LC5.1	Biochemistry research laboratory	30.2	Prof. DROCHIOIU	3	1÷21*
3	Faculty of Chemistry (ground floor), Building A, 11 Carol I, 700506 Iasi	LC-52	PhD students and PhD research laboratory	19.22	Prof. PUI	2	22÷29*
		LC-69		31.11			
4	Faculty of Chemistry (2nd floor), Building A, 11 Carol I, 700506 Iasi	LC-280	Organic chemistry research laboratory	37.68	Prof. MANGALAGIU	1	30÷42*
		LC-303		40.18			
5	Faculty of Chemistry (2nd floor), Building A, 11 Carol I, 700506 Iasi	LC-283	Organic chemistry research laboratory	46.80	Prof. BÎCU	2	*

Note: *chemical exhaust units, ovens, other equipment and accessories specific to the research activity in chemical analysis laboratories.

Recommendations: For the research infrastructure in the laboratories there is a continuous concern from the PhD coordinators of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in the updating the instrumentation. Currently 12 doctoral students in stage have access to scientific research laboratories within the Doctoral School, according to internal order procedures.

The indicator is fulfilled.

Criterion C.3. Internationalization

The Doctoral School of Chemistry demostrates an Internationalization strategy based on a strategy for enhancing the Internationalization of the doctoral studies. The most performance indicators have been adequately fullfilled.

Standard C.3.1. There is a strategy in place and it is applied to enhance the Internationalization of doctoral studies.

The Doctoral School of Chemistry demostrates an Internationalization strategy based on a strategy for enhancing the Internationalization of the doctoral studies that considers mobility agreements with universities abroad, support is granted to the organization of doctoral studies in International co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students, and the Internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures. The most performance indicators have been adequately fullfilled.

Performance Indicator *C.3.1.1. *IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending International scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.*

22 ERASMUS + agreements for the Faculty of Chemistry of Alexandru Ioan Cuza University, in force at the date of the evaluation were signed, they included : University of Chemical Technology and Metalurgy Sofia; Technische Universität Carolo-Wilhelmina zu Braunschweig; Rhine-Waal University of Applied Science; University of Konstanz; Universite d'Angers; Université Lille 1 - Sciences Et Technologies; Université Catholique De Lille; National Graduate School of Chemistry/Chem. Eng. of Lille; Ecole Nationale Supérieure De Chimie De Montpellier; Université de Paris-Sud (Paris XI); Université Paris-Est Créteil Val-de-Marne (UPEC); Université de Poitiers; University of Pannonia; Università di Camerino (UNICAM); Università della Calabria Arcavacata Di Rende; Utrecht University; Jagiellonian University of Krakow; Wroclaw University of Science and Technology: Bitlis Eren University; Firat University; and Marmara University.

In the 2014-2020 period, in the Doctoral School of Chemistry of Alexandru Ioan Cuza University, a number of 44 PhD students was enrolled. Out of the 44 PhD students, a number of 18 students performed International mobilities (ERASMUS internships, summer/winter schools, conferences, mobility projects, internships financed by PhD coordinators' projects), representing 40.91 % of the total enrolled students. Evidenced are provided in the Internal Assessment Report.

Recommendations: 22 ERASMUS + agreements for the Faculty of Chemistry of Alexandru Ioan Cuza University, in force at the date of the evaluation were signed. In the 2014-2020 period, 44 PhD students was enrolled in the Doctoral School of Chemistry of Alexandru Ioan Cuza University. Out of the 44 PhD students, 18 students performed International mobilities (ERASMUS internships, summer/winter schools,

conferences, mobility projects, internships financed by PhD coordinators' projects), representing 40.91 % of the total enrolled students.

The indicator is fulfilled.

Performance Indicator C.3.1.2. *In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in International co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.*

Currently, within the Doctoral School of Chemistry at Alexandru Ioan Cuza University, there is an ongoing co-supervision agreement between the University of Montpellier, France, and the "Alexandru Ioan Cuza" University of Iasi, Romania. ION Cristina Smarandita is the PhD student which benefits of a co-supervision from Prof. Dr. Mihail BARBOIU (University of Montpellier) and Prof. Ionel MANGALAGIU ("Alexandru Ioan Cuza" University of Iasi), on the "Artificial water and ion channels" topic. At the University of Montpellier, the first enrollment is in Chemistry and Physical Chemistry of Materials, and at the "Alexandru Ioan Cuza" University of Iasi, the first enrollment is in Chemistry, enrollment being considered from the beginning of the 2019-2020 academic year.

There is only one PhD thesis defended under International co-supervision based on an agreement signed in 2014, the thesis was defended on 27.02.2018.

Foreign experts have conducted the following activities for PhD students of SDC at IOSUD-UAIC :

1) EUROCHAMP-2020, Trans-national access, ESC-Q-UAIC chamber, Integrated Center of Environmental Science Studies in the North-Eastern Development Region (CERNESIM), "Alexandru Ioan Cuza" University of Iasi, Romania, activity carried out by Dr Terry DILLON, University of York, UK, together with PhD student Claudiu ROMAN (ESC-Q-UAIC chamber experiments), 09.12.2019-20.12.2019.
2) EUROCHAMP-2020, Trans-national access, ESC-Q-UAIC chamber, Integrated Center of Environmental Science Studies in the North-Eastern Development Region (CERNESIM), "Alexandru Ioan Cuza" University of Iasi, Romania, activity carried out by Raluca CIURARU, INRA-French National Institute for Agricultural Research, France, together with th following PhD students: Claudiu ROMAN (ESC-Q-UAIC chamber experiments), Laurenţiu ŞOROAGĂ (ESC-Q-UAIC experimental set-up) and Cornelia AMARANDEI (LC-ToF-MS analysis) 30.08.2019-12.09.2019.
3) "Vibrational Circular Dichroism – Technique for the determination of absolute configuration and kinetics of racenisation" Conference, presented by Prof. PhD Nelu Grinberg, Chemical Development Department, Boehringer Ingelheim Pharmaceuticals, Inc., Connecticut, USA, on May 17, 2018.
4) "Donor – Acceptor Cyclopropanes: Unique Structural Units to Acces Carbo- and Heterocyclic Compounds" Cobference, presented by Prof. PhD Daniel B. Werz, Technische Universitat Braunschweig, on April 23, 2018.
5) "Contributions to nuclear cycle chemistry" Conference, prezented by PhD habil. Karin Popa, European Commission, Joint Research Centre (JRC), Karlsruhe, Germany, on December 6, 2017.
6) Programme PHC BRANCUSI 2017 intitulé "Ozonolyse de composés oxygénés insaturés d'origine biogénique dans l'atmosphère: Des cinétiques à la formation d'aérosols organiques secondaires"/"Ozonoliza compusilor Oxigenati nesaturati de natura biogena in Atmosfera: de la cinetica la formarea aerosolilor organici secundari" (OZOA), activity undertaken by Prof. Alexandre TOMAS (07-14.06.2017) and postdoctoral researcher Marius DUNCIANU (14.06-12.07.2017) from the

IMT Lille Douai, Ecole Mines-Telecom, IMT University of Lille, together with the PhD student Claudiu ROMAN (ESC-Q-UAIC chamber experiments).

7) The ceremony of awarding the title of Doctor Honoris Causa of "Alexandru Ioan Cuza" University of Iasi to Mr. Prof. PhD Matthias Tamm, Technische Universitat Braunschweig, on December 5, 2017.

8) "4eme Colloque Franco-Roumain De Chimie Medicinale" Conference, held from 05 to 07 October 2017", Prof. Benoît RIGOT, Dr. Cristophe WATERLOT, Dr. Pierrick DUFRENOY etc., 05-07.10.2017.

9) Seminar "SciFinder – The choice for chemisty research" Seminar presented by Tetiana Khistova and Veli-Pekka Hyttinen, Chemical Abstract Services together with the Association of Universities, Research-Development Institutes and Central University Libraries of Romania ANELIS PLUS, S.C. E-INFORMATION S.R.L, May 24, 2017.

10) 1st International Summer School "Proteomics - from Introduction to Clinical Applications", on 9-14 July 2017", Cristoph BORCHERS, Martina MACHT, Michael GLOCKER, Michael PRZYBYLSKI etc., 9-14.07.2017.

11) Information activity "Agence universitaire de la Francophonie en Europe centrale et orientale: projects, mobilites, formations pour les etudiants, les enseignants et les chercheurs des universities members" organized by Agence Universitaire de la Francophonie, on February 26, 2016.

There is a need to increase the number of PhD theses under International supervision. An possible action could be the craetion of bilateral agreements with universities of the Romania sorrounded countries (Bulgaria, Germany).

Recommendations: Within the Doctoral School of Chemistry at Alexandru Ioan Cuza University, there is an ongoing co-supervision agreement between the University of Montpellier, France, and the "Alexandru Ioan Cuza" University of Iasi, Romania. There is only one PhD thesis defended on 27.02.2018 under International co-supervision. Several foreign experts have conducted teaching activities for PhD students of the Doctoral School of Chemistry at Alexandru Ioan Cuza University.

There is a need to increase the number of PhD theses under International supervision. An possible action could be the craetion of bilateral agreements with universities of the Romania sorrounded countries (Bulgaria, Germany).

The indicator is partially fulfilled.

Performance Indicator C.3.1.3. *The Internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract International doctoral students; by including International experts in guidance committees or doctoral committees etc.).*

During 2016-2020, the "Alexandru Ioan Cuza" University of Iaşi carried out a series of actions / visits to promote the University by participating in educational fairs (Attracting US students to Romania: A Fulbright capacity-building workshop, June 2017; European Association for International Education, Seville-2017, Geneva-2018 and Helsinki-2019; University promotion in high schools and universities in Astana, Kazakhstan). Also, in 2017, an institutional level brochure "Reasons to choose Alexandru Ioan Cuza University of Iasi as a study destination" was prepared by the Doctoral School of Chemistry at Alexandru Ioan Cuza University, for an educational fair for attracting International doctoral students. In 2017, the Educational Fair was organized in Iasi within the event "International Staff Training Week", 2nd Edition,

Iasi, May 15-19, 2017. PhD supervisors hold dialogues with researchers and specialists from abroad in order to identify common solutions allowing the attraction of International students in Romania.
As part of a transnational activity, PhD student Caterina Mapelli from York University, UK, between 09.12.2019-20.12.2019 conducted research experiments at the Integrated Center of Environmental Science Studies in the North East region of Romania (CERNESIM), „Alexandru Ioan Cuza" University of Iasi, Romania, together with PhD student Claudiu ROMAN (ESC-Q-UAIC chamber experiments), enrolled at SDC from IOSUD-UAIC.
Within the SDC from IOSUD-UAIC there was only one doctoral thesis developed under International co-supervision based on an agreement signed in 2014 (UNGUREANU Iurie, Romanian ethnic from the Republic of Moldova). The commission included, together with the doctoral coordinators, Academician Aurelian GULEA from the Academy of Sciences of the Republic of Moldova and Academician Tudor LUPASCU from the Institute of Chemistry of Academy of Sciences of Moldova, Chisinau, Republic of Moldova. It is also worthy to mention that Prof. univ. dr. Mette Marie Rosenkilde from the University of Copenhagen, Denmark was appointed as a member in the commission for the analysis of the thesis elaborated by the PhD student AMARANDI Roxana.
At the institutional level, brochures have been produced in English for doctoral schools to facilitate the rapid information of potential International candidates.
For the doctoral field of Chemistry, the attractiveness is low at the moment. Currently, PhD supervisors from SDC from IOSUD-UAIC, are taking steps to improve this objective, by developing collaborative relationships with specialists from abroad in order to conclude co-supervision agreements for coordinating doctoral theses.

Recommendations: During 2016-2020, the "Alexandru Ioan Cuza" University of Iaşi participated in educational fairs (Attracting US students to Romania: A Fulbright capacity-building workshop, June 2017; European Association for International Education, Seville-2017, Geneva-2018 and Helsinki-2019; University promotion in high schools and universities in Astana, Kazakhstan). Also, an institutional level brochure "Reasons to choose Alexandru Ioan Cuza University of Iasi as a study destination" was prepared by the Doctoral School of Chemistry at Alexandru Ioan Cuza University, for attracting International doctoral students. At the institutional level, brochures have been produced in English for doctoral schools to facilitate the rapid information of potential International candidates. In 2017, the Educational Fair was organized in Iasi within the event "International Staff Training Week".
As part of a transnational activity, PhD student Caterina Mapelli from York University, UK, conducted research experiments between 09.12.2019-20.12.2019 at the Integrated Center of Environmental Science Studies in the North East region of Romania (CERNESIM), „Alexandru Ioan Cuza" University of Iasi, Romania, together with PhD student Claudiu ROMAN (ESC-Q-UAIC chamber experiments), enrolled at SDC from IOSUD-UAIC.
There was only one doctoral thesis developed under International co-supervision.
For the doctoral field of Chemistry at Alexandru Ioan Cuza University, the attractiveness is low at the moment. Currently, PhD supervisors are taking steps to improve this objective, by developing collaborative relationships with specialists from abroad in order to conclude co-supervision agreements for coordinating doctoral theses.

The indicator is partially fulfilled.

IV. SWOT Analysis

Strengths:	**Weaknesses:**
- The high professional quality of the PhD advisors. - Active measures promoted by the university to help financial doctoral students (the 4000 lei / student / year). - Acceptable infrastructure of laboratories and research centers. - Excellent training of the graduated PhD. - High rate of employment in the teaching and research areas.	- The number of PhD advisors is low. - The relatively high number of students dropping out of doctoral studies for various reasons. - The advanced training program contains disciplines that need more advanced content. - Internationalization programs, collaborations and interships should be increased.
Opportunities:	**Threats:**
- Increase the budgetary grants of the PhD contracts; - Use of social networks for publicising the doctoral program.	- low budgetary grants of the PhD contracts that is insufficient for cover the minimum living costs in Iasi. This situation forces the PhD students to find a second job which is detrimental for the development of the doctoral studies as the most of PhD thesis cannot be defended in 3 years. If the budgetary grants cannot be increased, the involvement of the PhD student in a research project to supplement the income is recommended. Alternatively, the grants should be extended by one/two years more. - actions must be taken for reducing the time in getting the necessary reactants/materials for developing the doctoral work of the students, one of them could be the creation of an stock of the main materials/consumables needed by the PhD students in the corresponding research laboratories. - the membership in scientific committees of publications and conferences, invited speakers in conferences or groups of experts held abroad, member of the commissions for the defence of doctoral theses at foreign universities, co-supervision with a foreign university, etc) should be developed. - There is a need to increase the number of PhD theses under International supervision and the number of mobilities of the PhD students. A possible action could be the creation of bilateral

	agreements with university organizations in the Romania sorrounded countries (Bulgaria, Germany, etc).

V. Overview of judgments awarded and of the recommendations

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
1.	**PI**	**A.1.1.1.** The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain: a) the internal regulations of the Doctoral School; b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct; c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies); d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad; e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings; f) the contract for doctoral studies; g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.	Fullfilled	The different performance indicators are adequately fullfilled and they are in agreement with the university and governamental regulations. One aspect that needs attention is the low budgetary grants of the PhD contracts that is insufficient for cover the minimum living costs in Iasi. This situation forces the PhD students to find a second job which is detrimental for the development of the doctoral studies as the most of PhD thesis cannot be defended in 3 years. Alternatively, if the budgetary grants cannot be increased, the involvement of the PhD student in a research project to supplement the income is recommended. Alternatively, the grants should be extended by one/two years more.
2.	**PI**	**A.1.1.2.** The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.	Fullfilled	The different performance indicators are adequately fullfilled and in agreement with the university and governamental regulations.
3.	**PI**	**A.1.2.1.** The existence and effectiveness of an appropriate IT system to keep track of	Fullfilled	The new computer system eSIMS school management program implanted by the

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		doctoral students and their academic background.		university is an appropriate IT system to keep track of doctoral students and their academic background. Furthermore, the university implemented the rules and regulation on the organization, functioning and operationalization of the Unique Registration Electronic Archive of Romanian Universities (RMUR) for the record of the PhD students and their academic background. Adequate measurements are taken by the university for implanting the IT systems.
4.	**PI**	**A.1.2.2.** The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.	Fullfilled	Turnitin software and Ballistic Cell platform have been implemented at "Alexandru Ioan Cuza" University of Iasi to verify the percentage of similarity in all doctoral theses. 17 of the 27 theses in Chemistry defended in the evaluation period were checked for similarities with good performance.
5.	**IP**	**A.1.3.1.** Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.	Fullfilled	Even only 6 Ph advisors are active in the PhD program in Chemistry at "Alexandru Ioan Cuza" University of Iasi, during the evaluation period, 16 projects (2 of them with International funding) were granted. The ratio is quite positive, the projects address relevant themes for the different Chemistry areas involved in the doctoral studies and they are engaging doctoral students.
6.	**PI ***	**A.1.3.2.** The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.	Fullfilled	The percentage of doctoral students active at the time of the evaluation of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi, who for at least six months receive additional funding sources besides government funding, is at least 28.57 %. Out of the 21 PhD students of the Doctoral School of Chemistry, 9 PhD students were employed in projects granted by PhD coordinators.
7.	**PI ***	**A.1.3.3.** At least 10% of the total amount of doctoral grants obtained by the university	Fullfilled	11-13 % in 2019 and 2020 of the total amount of doctoral grants of the Doctoral

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).		School of Chemistry at "Alexandru Ioan Cuza" University of Iasi were used to reimburse professional training expenses of doctoral students and to supply materials/consumibles for their doctoral theses. Extensive administrative structure caused prolonged delays in the obtaining of the requested materials. For the benefit of the doctoral training, actions must be taken for reducing the time in getting the necessary materials for developing the doctoral work of the students, one of them could be the creation of an stock of the main materials/consumables needed by the PhD students in the corresponding research laboratories.
8.	**CPI**	**A.2.1.1.** The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to International databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly	Fullfilled	The venues and the material equipment available to Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi enable the research activities to be carried out, including computers, specific software, laboratory equipment, library, and access to International databases. The equipments and facilities available for the students are sufficient for developing their doctoral studies. Access to the databases via IP and mobile devices is implanted.
9.	**CPI**	**A.2.1.2.** The Doctoral School has collaboration agreements with higher education institutions, with research institutes, with research networks for various research infrastructures exploitation in partnership and presents publicly its offer of research services through a profile platform.	Fullfilled	The Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi has a collaboration agreement with the Integrated Center of Environmental Science Studies in the North-Eastern Development Region (CERNESIM) and with the "Petru Poni" Institute of Macromolecular Chemistry, for supporting doctoral thesis programs by implementing co-supervision topics. Furthermore, the Doctoral School of Chemistry has a collaboration with several international research instituions within the Erasmus program.
10.	**CPI**	**A.2.1.3.** The Doctoral School demonstrates that it is concerned with the permanent	Fullfilled	The Doctoral School at "Alexandru Ioan Cuza" University of Iasi is concerned with

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		renewal of research infrastructure that allow doctoral students to access current research resources, by applying in various competitions to fund research infrastructure and by acquiring research infrastructure from the IOSUD revenues.		the permanent renewal of research infrastructure by applying in various competitions coordinated by members of for 4 laboratories of the Doctoral School of Chemistry. Currently, one project named "Research Center with Integrated Techniques for Atmospheric Aerosol Investigation in Romania" was granted with 89,570,958.10 RON and is being implemented over 36 months from 04.09.2020.
11.	**CPI**	**A.3.1.1.** Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.	Fullfilled	6 PhD coordinators of the Doctoral School at "Alexandru Ioan Cuza" University of Iasi meet all 6 criteria of Order 6129/2016, field Chemistry; 1 PhD coordinator meets 5 criteria (he does not meet the FICAP criterion, the minimum cumulative impact factor in publications as main author); at the time of obtaining the habilitation certificate, the minimum performance conditions for the university professor of this PhD advisor were satisfied. With respect to the criteria of Order 6129/2016, the percentage of staff with the right of PhD supervising who fully meet the criteria is 85.71 %.
12.	**PI ***	**A.3.1.2.** At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.	Fullfilled	All PhD advisors of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi have a full-time employment contract for an indefinite period.
13.	**PI**	**A.3.1.3.** The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.	Fullfilled	All PhD supervisors of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi are teaching staff with proved expertise in the field of the study subjects they teach and they got their habilitations in higher education.
14.	**PI ***	**A.3.1.4.** The percentage of doctoral thesis advisors who concomitantly coordinate more	Fullfilled	In the of the Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi,

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs does not exceed 20%.		there are no PhD coordinators who coordinate more than 8 PhD students at the same time.
15.	**CPI**	**A.3.2.1.** At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science- or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including International-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy International awareness within the past five years, consisting of: membership on scientific boards of International publications and conferences; membership on boards of International professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad. For Arts and Sports and Physical Education Sciences, doctoral thesis advisors shall prove their International visibility within the past five years by their membership on the boards of professional associations, membership in organizing committees of arts events and International competitions, membership on juries or umpire teams in artistic events or International competitions.	Partially fullfilled	All 7 PhD coordinators at Doctoral School of Chemistry at "Alexandru Ioan Cuza" University of Iasi have more than 12 indexed publications in the Web of Science in the period 2014-2021. All PhD coordinators have relevant significance for their field of expertise and International visibility as evidenced by the significant number of citations of their articles. However, the membership in scientific committees of publications and conferences, invited speakers in conferences or groups of experts held abroad, member of the commissions for the defense of doctoral theses at foreign universities, co-supervision with a foreign university, etc) are not demonstrated.
16.	**PI ***	**A.3.2.2.** At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years	Partially fullfilled	All doctoral thesis advisors continue to be active in their scientific field, and 6 of them acquire at least 25 % of the score requested by the minimal CNATDCU standards in force at the time of the evaluation. The one doctoral thesis advisor having a score lower than 25 % in $FICA_P$ criterion accounts for a percentage of 16 % of the total. Thus, the total percentage of who fully meet all criteria is 85.71 %
17.	**PI ***	**B.1.1.1.** The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years	Not fullfilled	The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.		studies in Chemistry at Alexandru Ioan Cuza University in the last 5 years and the number of places financed from the state budget into the competition in the doctoral school is 0.08. On the other hand, the ratio of the number of candidates in the last five years and the number of places financed by the state budget into the competition in the doctoral studies in Chemistry at Alexandru Ioan Cuza University is 0.68. There were two main reasons for not reaching the performance indicator threeshold : 1) The existence of the Gheorghe Asachi Technical University and the Petru Poni Institute of Macromolecular Chemistry in Iasi, they are offering doctoral programs in Chemistry. The students decided the doctoral school they considered more appropriate. 2) The number of doctoral subject and funded research projects are much higher at the Petru Poni Institute of Macromolecular Chemistry in Iasi, and thus, higher amounts of the doctoral grants and broad variety of equipments than in Alexandru Ioan Cuza University are offered. It should be considered that higher bursary doctoral grants are needed by the students coming from abroad Iasi. The PhD School of Chemistry at IOSUD-UAIC should should made efforts for attracting students from abroad. It is suggested the publicizing in media and the increase of the bursary doctoral grants for students coming from abroad Iasi.
18.	**PI ***	**B.1.2.1.** Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.	Fullfilled	The admission competition in the Doctoral School of Chemistry at Alexandru Ioan Cuza University includes specific tests on Chemistry and an examination of linguistic skills. The candidate's registration file includes information on the research topic of interest (selected from the topics/proposals of PhD coordinators), Curriculum Vitae, list of scientific papers of the candidate (if applicable) and certificate of knowledge of a foreign language

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
				(usually English), all them are considered by the admission commission in the admission process. The admission folder also includes certification documents as well as copies of the diplomas attesting the professional training of the candidates. The minimum admission average is 8, the candidates being admitted in descending order of the admission average, within the number of vacant PhD positions at each doctoral coordinator and at the level of the doctoral school. As as part of the admission procedure, the selected candidates have a compulsory interview with the PhD supervisors.
19.	**PI**	**B.1.2.2.** The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission does not exceed 30%.	Fullfilled	The average expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University in the period of evaluation is 15 %. During the evaluation period, 5 PhD students have been excluded in the 3rd year of studies and 3 PhD students have been excluded during the extension. In general, the expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University is reasonable.
20.	**PI**	**B.2.1.1.** The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.	Fullfilled	The existence of 3 disciplines relevant for the training in scientific research of the PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University, of which at least one discipline intended for the in-depth study of research methodology, is clearly demostrated.
21.	**PI**	**B.2.1.2.** At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.	Fullfilled	From the academic year 2018-2019, the ethics course is compulsory for all PhD students in the first year and the importance of the ethics and academic deontology is taken into account during the entire duration of the PhD training for each PhD student, including the PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University.
22.	**PI**	**B.2.1.3.** The IOSUD has mechanisms to ensure that the academic training program	Fullfilled	The Doctoral School of Chemistry at Alexandru Ioan Cuza University ensures

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities.		that the training program based on advanced university studies address "the learning outcomes" needed for providing the competencies on knowledge, skills and responsibility and autonomy of the doctoral students upon complexion of the doctoral program.
23.	**PI**	**B.2.1.4.** All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.	Fullfilled	Throughout the entire doctoral training period, the PhD students from the Doctoral School of Chemistry at Alexandru Ioan Cuza University benefit from counseling and guidance from the members of the guidance commissions, this is reflected in written guidance and feedback or regular meeting.
24.	**CPI**	**B.2.1.5**. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.	Fullfilled	The ratio between the number of PhD students and the total number of supervising teachers/researchers in the Doctoral School of Chemistry at Alexandru Ioan Cuza University is 1.08:1. This assures a high devoted attention to the training and guidance of the PhD students.
25.	**CPI**	**B.3.1.1.** For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain	Fullfilled	The Doctoral School of Chemistry at Alexandru Ioan Cuza University complies the performance indicator because at least one paper in WoS with impact factor journal per doctoral student who has obtained a doctor's title within the past 5 years is published. For the 21 PhD students who have obtained the title of PhD in Chemistry in the last 5 years, 63 papers are reported. The number of papers in relevant journals with high impact factors is significant and the production of articles per defended PhD is notorious. All the selected 5 papers have been published in reputed journals in their specific fields (all with high impact factor and all in Q1 rank) and the contributions by the PhD students are relevant and original, paying excellence to the advance of the knowledge and science at International level.
26.	**PI ***	**B.3.1.2.** The ratio between the number of presentations of doctoral students who	Fullfilled	A total of 43 contributions to International conferences and 86 contributions to

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious International events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.		national conferences is reported for the PhD students of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, this accounts for a ratio between the number of presentations and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) of 2.15.
27.	**PI ***	**B.3.2.1.** The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.	Fullfilled	The number of PhD theses of the Doctoral School of Chemistry at Alexandru Ioan Cuza University allocated to a specific reviewer from a higher education institution, other than the evaluated IOSUD does not exceed two in a year for the theses coordinated by the same doctoral thesis advisor.
28.	**PI ***	**B.3.2.2.** The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.	Fullfilled	The number of PhD theses of the Doctoral School of Chemistry at Alexandru Ioan Cuza University assigned to a given reviewer from another higher education institution than the one in which the PhD thesis is organized and the number of PhD theses within the past 5 years defended in the doctoral field of Chemistry is 0.07-0.13. The number of defended PhDs is higher than 10.
29.	**PI**	**C.1.1.1.** The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory: a) the scientific work of Doctoral advisors; b) the infrastructure and logistics necessary to carry out the research activity; c) the procedures and subsequent rules based on which doctoral studies are organized; d) the scientific activity of doctoral students; e) the training program based on advanced academic studies of doctoral students; f) social and academic services (including for participation at different events, publishing	Fullfilled	The Doctoral School of Chemistry at Alexandru Ioan Cuza University have demonstrated the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD. The following assessed criteria have been adequately described : (a) the scientific work of Doctoral advisors; (b) the infrastructure and logistics necessary to carry out the research activity; (c) the procedures and subsequent rules based on which doctoral studies are organized; d) the scientific activity of doctoral students; e) the training program based on advanced academic studies of doctoral students; and f) social and academic services (including for participation at

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		papers etc.) and counselling made available to doctoral students.		different events, publishing papers etc.) and counselling made available to doctoral students.
30.	**PI ***	**C.1.1.2.** Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.	Fullfilled	At the level of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, templates have been proposed for the feedback sheets for evaluating the degree of the PhD students satisfaction. The questionnaires are applied to the PhD students of the first, second and third year and also to those in extended period. In the future, the questionnaires will be applied to all PhD students enrolled in the doctoral study program. The results of the analysis of the measures proposed by PhD students are applicable for a series of indicators for which averages lower than 4.5 were considered. The aspects to be improved deal with the need of a stock of materials/consumables at the university, the speeding of the acquisition process and the mobility of the students.
31.	**CPI**	**C.2.1.1.** The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as: a) the Doctoral School regulation; b) the admission regulation; c) the doctoral studies contract; d) the study completion regulation including the procedure for the public presentation of the thesis; e) the content of training program based on advanced academic studies; f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data; g) the list of doctoral students within the domain with necessary information (year of registration; advisor); h) information on the standards for developing the doctoral thesis; i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information	Fullfilled	The IOSUD of Alexandru Ioan Cuza University publishes on the website the following information : the Doctoral School regulation; (b) the admission regulation; (c) the doctoral studies contract; (d) the study completion regulation including the procedure for the public presentation of the thesis; (e) the content of training program based on advanced academic studies; (f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data; (g) the list of doctoral students within the domain with necessary information (year of registration; advisor); (h) information on the standards for developing the doctoral thesis; (i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		will be communicated at least twenty days before the presentation.		
32.	**PI**	**C.2.2.1.** All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.	Fullfilled	The "Alexandru Ioan Cuza" University of Iasi offers to all PhD students the opportunity to access the following databases: Science Direct Freedom Collection, Scopus, SciFinder (CAS), MathSciNet, etc., while through the "Mihai Eminescu" Central University Library in Iasi. All PhD students also have access to other databases, such as: SpringerLink Journals, ProQuest Central, Emerald Journals, Science Journals, Thompson Reuters, Oxford Journals, SAGE Journals HHS Collection, EBSCO, Wiley Journals etc. Moreover, for a number of existing equipment within the CERNESIM Center, with which the Doctoral School of Chemistry has concluded a collaboration agreement, a series of dedicated software and databases exists.
33.	**PI**	**C.2.2.2.** Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.	Fullfilled	The "Alexandru Ioan Cuza" University of Iasi has purchased the Turnitin application - an electronic system for checking the degree of similarity with other existing scientific or artistic creations. Through the application, the access of all the academic staff from the University, and implicitly of the PhD coordinators and the PhD students is assured. The students can use the afore mentioned application with the consent of the PhD coordinator.
34.	**PI**	**C.2.2.3.** All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.	Fullfilled	For the research infrastructure in the laboratories there is a continuous concern from the PhD coordinators of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in the updating the instrumentation. Currently 12 doctoral students in stage have access to scientific research laboratories within the Doctoral School, according to internal order procedures.
35.	**PI ***	**C.3.1.1.** IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes,	Fullfilled	22 ERASMUS + agreements for the Faculty of Chemistry of Alexandru Ioan Cuza University, in force at the date of the

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
		with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending International scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.		evaluation were signed. In the 2014-2020 period, 44 PhD students was enrolled in the Doctoral School of Chemistry of Alexandru Ioan Cuza University. Out of the 44 PhD students, 18 students performed International mobilities (ERASMUS internships, summer/winter schools, conferences, mobility projects, internships financed by PhD coordinators' projects), representing 40.91 % of the total enrolled students.
36.	**PI**	**C.3.1.2.** In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in International co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.	Partially fullfilled	Within the Doctoral School of Chemistry Alexandru Ioan Cuza University, there is an ongoing co-supervision agreement between the University of Montpellier, France, and the "Alexandru Ioan Cuza" University of Iasi, Romania. There is only one PhD thesis defended on 27.02.2018 under International co-supervision. Several foreign experts have conducted teaching activities for PhD students of the Doctoral School of Chemistry Alexandru Ioan Cuza University. There is a need to increase the number of PhD theses under International supervision. A possible action could be the creation of bilateral agreements with university organizations in the Romania sorrounding countries (Bulgaria, Germany, etc).
37.	**PI**	**C.3.1.3.** The Internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract International doctoral students; by including International experts in guidance committees or doctoral committees etc.).	Partially fullfilled	During 2016-2020, the "Alexandru Ioan Cuza" University of Iaşi participated in different educational fairs. Also, an institutional level brochure was prepared for attracting International doctoral students and brochures have been produced in English for doctoral schools to facilitate the rapid information of potential International candidates. In 2017, the Educational Fair was organized in Iasi. As part of a transnational activity, PhD student Caterina Mapelli from York University, UK, conducted research

No.	Type of indicator (PI, PI *, CPI)	Performance indicator	Judgment	Recommendations
				experiments between 09.12.2019-20.12.2019 at the Integrated Center of Environmental Science Studies in the North East region of Romania (CERNESIM). There was only one doctoral thesis developed under International co-supervision. For the doctoral field of Chemistry at Alexandru Ioan Cuza University, the attractiveness is low at the moment. Currently, PhD supervisors are taking steps to improve this objective, by developing collaborative relationships with specialists from abroad in order to conclude co-supervision agreements for coordinating doctoral theses.

VI. Conclusions and general recommendations

Before providing the conclusions of the evaluation of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi, it is necessary to put in perspective its environment. Two aspects are critical for explaining the aspects that have been not fulfilled during the evaluation :

1- The Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi was created in 2017 by separation from the Doctoral School of Chemistry and Life and Earth Sciences. Therefore, for the evaluation period (2014-2020), the evaluation should be mainly focus in the period 2018-2020 which relatively short for a precise evaluation. Even by considering this circumstance, the most of performance indicators have been passed and the ones that were not partially or fully passed, are in the way to be improved.

2- There is a particular legitimate competitiveness of the doctoral studies in Chemistry in Iasi. Iasi is among the biggest University Centers in Romania. Beside the Alexandru Ioan Cuza University, Chemistry doctoral studies are also offered by Gheorghe Asachi Technical University (Faculty of Chemical Engineering and Environmental Protection; Faculty of Materials Science and Engineering), Grigore T. Popa University of Medicine and Pharmacy, and the Petru Poni Institute of Macromolecular Chemistry. Therefore, the competition in attracting graduates of masters´ programs both from Iasi or from other higher education institutions is quite difficult, particularly with respect to the Petru Poni Institute. The Petru Poni Institute has a high number of PhD coordinators, high number of available research projects of the PhD coordinators and also high funding at national level specifically only for research activities.

My evaluation of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi must be POSITIVE, particularly in terms of institutional capacity (mainly for managerial institutional structures and the quality of the human resources), educational effectiveness (mainly the content of doctoral programs and the results of doctoral studies and procedures for their evaluation), and quality management. The Internationalization is the aspect that need strong efforts for improving the performance of the Doctoral program in Chemistry of Alexandru Ioan Cuza University in Iasi.

Overview on the INSTITUTIONAL CAPACITY of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi.

The specific regulations and their application at the level of the Doctoral School of Chemistry are adequate, but one aspect that needs attention is the low budgetary grants of the PhD contracts that is insufficient for cover the minimum living costs in Iasi. This situation forces the PhD students to find a second job which is detrimental for the development of the doctoral studies as the most of PhD thesis cannot be defended in 3 years. If the budgetary grants cannot be increased, the involvement of the PhD student in a research project to supplement the income is recommended, and/or the grants should be extended by one/two years more.

The IT systems (eSIMS school management program, Turnitin software and Ballistic Cell platform) for accessing international research and to verify the percentage of similarity in the doctoral theses are efficient and updated.

The percentage of doctoral students of the Doctoral School of Chemistry at “Alexandru Ioan Cuza” University of Iasi, who for at least six months receive additional funding sources besides government funding, is at least 28.57 %.11-13 % in 2019 and 2020 of the total amount of doctoral grants of the Doctoral School of Chemistry at “Alexandru Ioan Cuza” University of Iasi were used to reimburse professional training expenses of doctoral students and to supply materials/consumibles for their doctoral theses. 11-13 % in 2019 and 2020 of the total amount of doctoral grants of the Doctoral School of Chemistry at “Alexandru Ioan Cuza” University of Iasi were used to reimburse professional training expenses of doctoral students and to supply materials/consumables for their doctoral theses. Extensive administrative structure caused prolonged delays in the obtaining of the requested materials. For the benefit of the doctoral training, actions must be taken for reducing the time in getting the necessary reactants/materials for developing the doctoral work of the students, one of them could be the creation of a stock of the main materials/consumables needed by the PhD students in the corresponding research laboratories.

The equipment and facilities available in the Doctoral School of Chemistry at “Alexandru Ioan Cuza” University of Iasi for the students are sufficient for developing their doctoral studies. Access to the databases via IP and mobile devices is implanted.

Even only 6 PhD advisors are active in the PhD program in Chemistry at “Alexandru Ioan Cuza” University of Iasi, during the evaluation period, 16 projects (2 of them with International funding) were granted, this ratio is quite positive on the basis of the ratio of PhD advisors/number of projects. Out of 7 PhD coordinators, 6 of them meet all 6 criteria of Order 6129/2016, field Chemistry. All PhD advisors have a full-time employment contract for an indefinite period and they are teaching staff with proved expertise in the field of the study subjects they teach, and they got their habilitations in higher education. There is no PhD coordinators who coordinate more than 8 PhD students at the same time and each one have more than 12 indexed publications in the Web of Science in the period 2014-2021. All PhD coordinators have relevant significance for their field of expertise and International visibility as evidenced by the significant number of citations of their articles. However, the membership in scientific committees of publications and

conferences, invited speakers in conferences or groups of experts held abroad, member of the commissions for the defense of doctoral theses at foreign universities, co-supervision with a foreign university, etc) are not demonstrated.

Overview on the EDUCATIONAL EFFECTIVENESS of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi.

The ratio between the number of master's degree graduates of other higher education institutions in the country or abroad who have registered for the competition for admission to doctoral studies in Chemistry at Alexandru Ioan Cuza University in the last 5 years and the number of places financed from the state budget into the competition in the doctoral school is 0.08. On the other hand, the ratio of the number of candidates in the last five years and the number of places financed by the state budget into the competition in the doctoral studies in Chemistry at Alexandru Ioan Cuza University is 0.68. The lower ratios can be ascribed to the competitive doctoral program in other institutions in Iasi which have a higher number of doctoral subject and funded research projects. This can be partially remediated by increasing the bursary doctoral grants for the students coming from abroad Iasi and publicizing in social media.

The admission competition in the Doctoral School of Chemistry at Alexandru Ioan Cuza University is adequate. Although the average expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University in the period of evaluation is 15 %, efforts should be made for reducing the percentage. It would be beneficial for each student to be involved in a research project to supplement the income.

The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students and the ethics course is compulsory for all PhD students in the first year. The training program based on advanced university studies provides the needed knowledge, skills and responsibility and autonomy of the doctoral students upon complexion of the doctoral program. During their training, the PhD students benefit from counseling and guidance from the members of the guidance commissions and the ratio between the number of PhD students and the total number of supervising teachers in the Doctoral School of Chemistry is quite good (1.08:1).

The Doctoral School of Chemistry at Alexandru Ioan Cuza University For the 21 PhD students who have obtained the title of PhD in Chemistry in the last 5 years, 63 papers are reported. The number of papers in relevant journals with high impact factors is significant and the production of articles per defended PhD is notorious. Furthermore, 43 contributions to International conferences and 86 contributions to national conferences is reported for the PhD students of the Doctoral School of Chemistry at Alexandru Ioan Cuza University, this accounts for a ratio between the number of presentations and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) of 2.15.

Overview on the QUALITY MANAGEMENT of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi.

The Doctoral School of Chemistry at Alexandru Ioan Cuza University demonstrates the continuous development of the evaluation process and its internal quality assurance and adequate mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students. According to the PhD students´ feedback, the aspects to be improved in the doctoral program deal with the need of a stock of materials/consumables at the university, the speeding of the acquisition process and the mobility of the students. All PhD students have to access to a relevant number of databases for

supporting their research including an electronic system for verifying the degree of similarity with other existing scientific works.
All relevant regulations in the doctoral programs are given at the web page of Alexandru Ioan Cuza University.

Overview on the INTERNATIONALIZATION of the Doctoral School of Chemistry of Alexandru Ioan Cuza University in Iasi.
In the 2014-2020 period, 22 ERASMUS + agreements for the Faculty of Chemistry of Alexandru Ioan Cuza University, and 44 PhD students were enrolled. Out of the 44 PhD students, 18 students performed International mobilities (ERASMUS internships, summer/winter schools, conferences, mobility projects, internships financed by PhD coordinators' projects), representing 40.91 %. This percentage should be increased.
There is an ongoing co-supervision agreement between the University of Montpellier, France, and the "Alexandru Ioan Cuza" University of Iasi, Romania. There is only one PhD thesis defended on 27.02.2018 under International co-supervision. Several foreign experts have conducted teaching activities for PhD students of the Doctoral School of Chemistry Alexandru Ioan Cuza University.
There is a need to increase the number of PhD theses under International supervision and the number of mobilities of the PhD students. A possible action could be the creation of bilateral agreements with university organizations in the Romania sorrounded countries (Bulgaria, Germany, etc).
During 2016-2020, the "Alexandru Ioan Cuza" University of Iaşi participated in different educational fairs. Also, an institutional level different brochures have been produced in English for doctoral schools to facilitate the rapid information of potential International candidates. In 2017, the Educational Fair was organized in Iasi.
For the doctoral field of Chemistry at Alexandru Ioan Cuza University, the attractiveness is low at the moment. Currently, the PhD supervisors are taking steps to improve this objective, by developing collaborative relationships with specialists from abroad in order to conclude co-supervision agreements for coordinating doctoral theses.

General recommendations

1- Low budgetary grants of the PhD contracts that is insufficient for cover the minimum living costs in Iasi. This situation forces the PhD students to find a second job which is detrimental for the development of the doctoral studies as the most of PhD thesis cannot be defended in 3 years. If the budgetary grants cannot be increased, the involvement of the PhD student in a research project to supplement the income is recommended, and/or the grants should be extended by one/two years more.
2- Extensive administrative structure caused prolonged delays in the obtaining of the requested materials for the doctoral development. For the benefit of the doctoral training, actions must be taken for reducing the time in getting the necessary reactants/materials for developing the doctoral work of the students, one of them could be the creation of a stock of the main materials/consumables needed by the PhD students in the corresponding research laboratories.
3- The membership in scientific committees of publications and conferences, invited speakers in conferences or groups of experts held abroad, member of the commissions for the defense of doctoral theses at foreign universities, co-supervision with a foreign university, etc) by the PhD advisors should be developed.

4- Although the average expelling rate of PhD students in the Doctoral School of Chemistry at Alexandru Ioan Cuza University in the period of evaluation is 15 %, efforts should be made for reducing the percentage. It would be beneficial for each student to be involved in a research project to supplement the income.
5- Internationalization programs, collaborations and interships should be increased. There is a need to increase the number of PhD theses under International supervision and the number of mobilities of the PhD students. A possible action could be the creation of bilateral agreements with university organizations in the Romania sorrounded countries (Bulgaria, Germany, etc).

VII. Annexes

The evaluation was carried out on-line. Therefore, the summary of the different on-line meetings are attached.

Meeting with the contact person and the team who drafted the internal evaluation report for the doctoral study domain in Chemistry at the Alexandru Ioan Cuza University

On 9th September 2021, an on-line meeting between Prof. Arsene and Prof. Mangalagiu, and the members of the PhD in Chemistry evaluation panel, was held. The meeting started at 11 h and lasted for one hour; the meeting was held in English and recorded.

The report provided was excellent and was completed with additional updated information about the current PhD students, PhD graduated and employers. The replies by Prof. Arsene and Prof. Mangalagiu were accurate and clear. One aspect to be highlighted is the multidisciplinary formation of the PhD students which involves materials, physics, mathematics, engineering and biochemical disciplines.

The International evaluator of the PhD in Chemistry evaluation panel was interested in the absence of coordinator in the area of Materials and on current active coordinators in the Chemistry program.

The duration of the PhD studies was considered. It was clear that a few PhD students in Chemistry program ends in 3 years, typically 4 years are needed. Efforts are made by the PhD tutors in financing the additional extra year for the PhD students, this comes mainly from project grants. Furthermore, some PhD students have abandoned the program due to financial constrains due to insufficient amounts of the governmental/university grants, the most of them have looked for a job in private companies.

Whereas the involvement of the teachers in the PhD program is extremely high, there is an urgent need of increasing the monetary grants from the Romanian authorities.

Meeting with the academic staff corresponding to the doctoral study domain in Chemistry at the Alexandru Ioan Cuza University

On 9th September 2021, an on-line meeting between the members of the PhD in Chemistry evaluation panel, and some academic staff (Prof. Arsene, Prof. Mangalagiu, Prof Olariu, Prof Pui, Prof. Miclaus) of the doctoral study domain in Chemistry at the Alexandru Ioan Cuza University, was held. The meeting

started at 13h 30min and lasted for one hour and 20 minutes; the meeting was held in English and recorded.

During the evaluation period, 11 PhD advisors have been involved in the PhD program in Chemistry. The most students were financially supported by the Ministry of Research or the Alexandru Ioan Cuza University, a few students did not get financial support.

The number of students asking for a PhD in Chemistry are within the standard of the experimental program studies, but it has been declined over the years mainly due to the high standard of the program and to low financial support. The best graduated students enrolled doctoral programs in other institutions in Iasi (Petru Poni Institute for example) because of the higher monetary grants. Alexandru Ioan Cuza University authorities should claim to the Ministry of Research a significant increase of the governmental grants for PhD students in Chemistry.

The graduated PhD in Chemistry have found jobs in different companies, universities and research institutions. The International evaluator considers that the doctorate in Chemistry in Alexandru Ioan Cuza University is highly considered by the employers due to the high standard of the formation acquired during training.

Several strategies were discussed related to the increase of the number of PhD students in the Chemistry program. The involvement of companies was considered of great interest, but the issue related to insufficient monetary support seems the main limitation.

Finally, the gender balance is reasonable in the PhD program, the number of female students has been increased during the last years. The academic staff was clearly in favour of having good students without a preference for males or females.

The academic staff of the doctoral study domain in Chemistry at the Alexandru Ioan Cuza University is highly motivated, but they face serious limitations derived from the insufficient grants which are lower than the minimum cost for leaving in Iasi.

Meeting with PhD students of the doctoral study domain in Chemistry at the Alexandru Ioan Cuza University

On 13th September 2021, an on-line meeting between the members of the PhD in Chemistry evaluation panel, and 13 PhD students (Apostol I. Vlad, Iancu P. Cristina, Jitaru N. Ştefania-Claudia, Radu M. Ioana, Dănilă R.F. Raluca-Ştefania, Ion L. Cristina-Smărăndiţa, Măirean A. Ciprian-Paul, Mocanu V. Cosmin-Ştefan, Zubaş M. Andreea, Amarandei M. Cornelia, Negru G. Georgiana, Şoroagă G.V. Laurenţiu-Valentin, Roman C. Claudiu) was held. The meeting started at 9 h and lasted for one hour; the meeting was recorded.

The PhD students are satisfied with the established procedure for accessing the doctoral studies. All PhD students agreed that the grants are insufficient and they are forced to find a second job, this affects the performance and progress of the doctoral thesis. In fact, one of the students mentioned that she has to left her teaching job for finishing her PhD.

Few PhD students are involved in projects and the ones involved agreed the too extensive number of documents needed for being appointed.
All PhD students agreed on the need of receiving training in writing articles in English for publication as most of the students should write the articles themselves. PhD students have access to some platforms for articles and they appreciate the open access publication.
Timing for reaching materials/reactants and equipment spares is extremely long, this causes substantial delay in the progress of the PhD.
The PhD students appreciate the assistance to conferences and seminars but, due to limited annual budget, they prefer dedicate the funding to infrastructure for their experiments.
All PhD students appreciate the training during their doctoral studies as this will open greater opportunities to get a job. The PhD students prefer a job in Romania and they also prefer jobs dealing with teaching activities.

Meeting with the members of the Ethics Commission of the Alexandru Ioan Cuza University

On 13th September 2021, an on-line general meeting between all members of the PhD evaluation panel and different members of the Ethics Commission of the Alexandru Ioan Cuza University was held. The meeting started at 14 h and lasted for one hour; the meeting was recorded.
Recently the numbers of the members of the Ethics Committee was reduced to 5. The commission meets one a month and more often if necessary. Additional Research Ethics Committees in different faculties also exists. Time for resolution of cases is typically between 3 months and 1 year. Plagiarism and misconducting practice cases are the most common. Actually, few cases are active.

Meeting with doctoral graduated in Chemistry at the Alexandru Ioan Cuza University

On 13th September 2021, an on-line meeting between the members of the PhD in Chemistry evaluation panel, and different PhD graduates (Jureschi V. Monica căs. Iavorschi, Lupăescu G. Ancuţa-Veronica, Galon G. Alina-Giorgiana căs. Negru, Olaru M. Anda-Mihaela, Vîrlan V. Constantin, Ion I. Laura, Zaharia I. Marius-Mihai) was held. The meeting started at 15h 15min and lasted for one hour; the meeting was recorded.
Some PhD graduates defended their PhD more than 5 years ago, but the most have finishing in less than 5 years. All PhD graduates agree in the excellent training received during their doctoral period, the training help them to find a job. Also, all PhD students were very positive about their advisors, and they also appreciated the skins acquired by writing papers, reports and scientific documents.
The most PhD graduates find jobs in public research organizations in Rumania and they are satisfied with their activities and duties. They do not one to find jobs in companies nor in working outside Romania.

Meeting with the directors/persons in charge of the research centers/laboratories within the doctoral study domain in Chemistry at the Alexandru Ioan Cuza University

On 14th September 2021, an on-line meeting between the members of the PhD in Chemistry evaluation panel, and the directors of different research laboratories (Prof. Arsene, Prof Olariu, Prof Pui, Prof. Mangalagiu) was held. The meeting started at 9h 45min and lasted for one hour; the meeting was recorded.

Each PhD advisor in Chemistry has an owned laboratory and several centers are gathering additional experimental equipment (CERNESIM, LAICA). The PhD students in Chemistry have access to all equipment upon requirement, and they are operated by experienced technicians or skilled doctoral personnel. Costs of the use of the equipment came from projects, annual PhD doctoral budget, or university grant.
When spares or specific chemicals for running the equipment are needed, there is an administrative procedure which seems not sufficiently efficient in term of timing. Typically, a delay of 6-9 months is produced for getting the spares.
Good cooperation between the different research laboratories involved in the doctoral program in Chemistry is noticed.
The renovation of old equipment should be accomplished by the research laboratories, the same applies to the acquisition of new equipment. It seems that the university has not specific programs for renovation/acquisition of equipment, but there is an institutional program for printers renovation.
LAICA center got ISO standard for the analysis of some pollutants of wastewaters, but due to restricted budget, it was renovated.
Covid 2019 caused additional issues related to the maintenance and use of instrumental equipment, as well as delays in accessing the facilities by the students.

Meeting with the members of the Commission for Quality Evaluation and Assurance (CEAC) of the Alexandru Ioan Cuza University

On 14th September 2021, an on-line meeting between all members of the PhD evaluation panel, and some members of the Commission for Quality Evaluation and Assurance (CEAC) of the Alexandru Ioan Cuza University, was held. The meeting started at 15h 30min and lasted for one hour; the meeting was recorded.
The Committee was renovated about 18 months and the meetings have been affected by COVID 2019 restrictions.
Several issues were considered involved the similarity of the evaluation procedures in all PhD domains and the criteria for selecting new PhD students. Apparently, some cases in which a selected PhD student who passed all the requirements of the Alexandru Ioan Cuza University, was not accepted by the supervisor because it was not a previous knowledge. The issue could be related to the fact that several candidates appointed for the same PhD position and the PhD supervisor has to select one by using additional non-writing selection skills.

Meeting with the employers of doctoral graduates at the Alexandru Ioan Cuza University

On 14th September 2021, an on-line meeting between all members of the PhD evaluation panel, and different employers related to the Alexandru Ioan Cuza University was held. The meeting started at 17h and lasted for one hour; the meeting was recorded.
Several employers explain the excellent relationship with the Alexandru Ioan Cuza University and support the good standard of the trained PhD graduates. There was a question related to the training for teaching which is not usually provided in the doctoral programs of the Alexandru Ioan Cuza University. Furthermore, some employers explain a need of training students in particular areas. Currently, good training is provided in the area of IT and computing science, this is highly appreciated by the employers.

Because many questions were proposed, I do not have the time for asking a question related to the creation of spin-off companies at the Alexandru Ioan Cuza University.

Alicante (Spain) – 17th September 2021

Prof. José Miguel Martín Martínez
International evaluator of PhD program in Chemistry