
KEN


2023-2027

DOCTORAL SCHOOL

EDUCATION QUALITY REPORT

Szkoła Doktorska

Narodowe Centrum Badań Jądrowych



Name and seat of the doctoral school

Szkoła Doktorska Narodowego Centrum Badań Jądrowych i Instytutu Chemii i Techniki Jądrowej

Evaluation period

10/1/19–12/18/24

Name and seat of the entity that is responsible for running the doctoral school

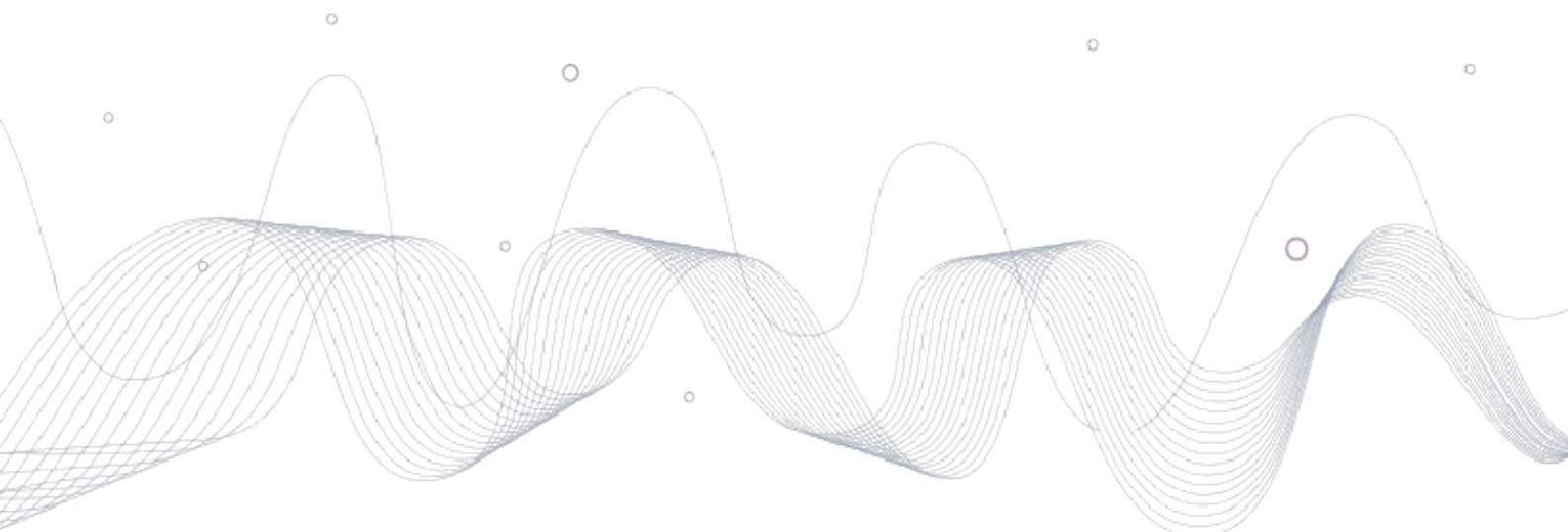
Narodowe Centrum Badań Jądrowych

Entities that jointly run the doctoral school (when conducted jointly)

Instytut Chemii i Techniki Jądrowej

Date of report

3/13/25



Composition of the evaluation team:

Chairman:

Zbigniew Kąkol

Secretary:

Anna Ewa Kaczmarska

Team members:

Rafał Szmigielski

Izabella Brand

Ignacy Rogoń



TABLE OF CONTENTS

I. General information on the doctoral school	5
II. Information on the inspection and its course	6
III. Collaboration between the entity and the doctoral student self-government	7
IV. Information on the doctoral school to which the statutory criteria apply	8
V. Final opinion and recommendations	19
VI. Assessment and reason	20

I. GENERAL INFORMATION ON THE DOCTORAL SCHOOL

Name of doctoral school	Szkoła Doktorska Narodowego Centrum Badań Jądrowych i Instytutu Chemii i Techniki Jądrowej
Date of establishment	2019
Date of commencement of education at doctoral school	10/1/19
Entity cooperating in the conduct of education (this does not refer to entities co-founding a doctoral school)	-
Domains of study	Natural sciences (from: 01-01-2018)
Discipline(s) of science or art in which training is provided	chemical sciences (from: 01-01-2018) physical sciences (from: 01-01-2018)
Name/scope of the education programme	Education Program at the Doctoral School run in the Units National Center for Nuclear Research and Institute of Nuclear Chemistry and Technology
Number of instructors	0
Number of doctoral students undergoing training at the doctoral school (as of 1/27/25)	71
Number of supervisors in terms of guidance in preparing doctoral dissertations (as of 1/27/25)	39
Number of auxiliary supervisors in terms of guidance in preparing doctoral dissertations (as of 1/27/25)	29

II. INFORMATION ON THE INSPECTION AND ITS COURSE

The Evaluation Team of prof. dr hab. Zbigniew Kąkol (chairman), dr hab. Anna Kaczmarska, (secretary), prof. dr hab. Rafał Szmigielski (expert), dr hab. Izabella Brand (expert) and mgr inż. Ignacy Rogoń (expert), conducted an evaluation of the Doctoral School (DS) run by the National Center for Nuclear Research (NCBJ) and the Institute of Chemistry and Nuclear Technology (IChTJ). The purpose of the evaluation was to analyze the quality of doctoral students' training, the effectiveness of the implementation of the training program, and to provide the DS with feedback on the operation of their school.

Substantive evaluation was carried out based on:

- ☒ Analysis of documentation, including the self-evaluation report with appendices (educational programs, regulations);
- ☒ A visitation conducted on April 10, 2025 at the NCBJ headquarters, Warsaw, 7 Pasteur Street, which included meetings with:
 - ☒ The authorities of the DS and the management of the DS operating entities;
 - ☒ DS lecturers, scientific supervisors and representatives of the Scientific Councils of both entities;
 - ☒ PhD students.
- ☒ Analysis of the Individual Research Plans (IRP) and mid-term assessment reports provided during the visit, randomly selected.

The visitation went smoothly. The unit was adequately prepared for it. Explanations, answers to the evaluation team's questions significantly supplemented the information on the functioning of the doctoral school.

III. COLLABORATION BETWEEN THE ENTITY AND THE DOCTORAL STUDENT SELF-GOVERNMENT

The doctoral school did not establish a doctoral student council due to the fact that there was no interest on the student side willing to form one.

Therefore, cooperation between doctoral students and staff, responding to and resolving potential problems/conflicts is done through meetings, conversations between doctoral students in the first instance with promoters as well as with people from the management of the doctoral school and the office of the doctoral school.

However, doctoral student council is definitely needed, since it takes over mediation between the individual students and the doctoral school. The presence of doctoral students during recruitment and mid-term assessment as observers is important and needed. So far there are no such observers. The doctorate school urgently needs a doctoral student council.

According to information provided during the visit, the doctoral student council is currently being established.

Recommendation:

Encourage doctoral students to create formal structures of the Doctoral Student Council and include their representatives in the DS Council and ensure their presence (as observers) during recruitment and mid-term assessment.

IV. INFORMATION ON THE DOCTORAL SCHOOL TO WHICH THE STATUTORY CRITERIA APPLY

- **The adequacy of the education programmes and individual research plans with respect to the learning outcomes for qualifications at level 8 of the PQF and their implementation:**

Education program

The Education Program at the Doctoral School of the National Center for Nuclear Research (DS) is implemented in the National Center for Nuclear Research (NCBJ) and the Institute of Nuclear Chemistry and Technology (ICHTJ) units.

In the report, the DS presents, in accordance with the level 8 of the Polish Qualifying Framework (PQF8), the learning outcomes in the categories of: knowledge, skills and social competences.

It presents second-degree characteristics typical of qualifications obtained within the framework of higher education.

In DS, doctoral students are required to follow an individual educational program agreed upon with their supervisors and approved by the School Council. Before the beginning of each semester, the School announces a list of proposed classes and assigns ECTS credits to them (<https://gradschool.ncbj.gov.pl/courses/>). Classes within DS are conducted in English, which significantly contributes to internationalization.

The classes offered at the school are grouped into blocks used to formulate the requirements for passing the educational program:

- ☒ Basic knowledge block - which prepares for the discipline exams preceding the mid-term assessment and covers the basic departments of physics and chemistry.
- ☒ Block of methodological classes.
- ☒ Block of specialized lectures - lectures held at universities (cooperation agreements), as well as monographic lectures held within the School.
- ☒ Research and development issues block.
- ☒ Block of seminars (doctoral and specialized) - a doctoral student is required to attend at least one specialized seminar for the entire period of study and to actively participate in one of the Doctoral Seminars conducted by the School for the entire period of study. Doctoral students receive assistance in seminar preparation.
- ☒ Block related to the presentation of results and applying for funds for scientific research.

The education program offers professional internships in the form of conducting classes or participating in their conducting as part of the professional internship block.

The school supports gaining of foreign language qualifications, including Polish language courses for foreigners.

The combination in DS of two scientific disciplines, physics and chemistry, introduces the desired interdisciplinarity of the teaching conducted there. Among the research areas requiring special integration, DS lists nuclear energy, radiopharmacy and materials research.

Evaluation of educational quality is based on surveys and interviews with students. There is also administrative control, but this is an evaluation of formal activities. The usefulness of surveys is difficult to assess.

The DS indicates that the educational program is evolving to strike an appropriate balance

between the need to provide structured education and time for research. The program improvement process takes into account feedback from doctoral students.

Individual Research Plans (IRP)

The DS regulations contain provisions relating to the development of IRP, its implementation and evaluation. The implementation of the IRP by the doctoral student is subject to annual evaluation, and a mid-term assessment, the rules for conducting which are also described in the DS regulations.

Research activities, as presented in the IRP, were also evaluated in terms of guaranteeing the achievement of the learning outcomes planned for the PQF8 qualifications.

Attention was paid to whether IRP are used to solve research problems that have been identified in the dissertation. The presence in the IRP of options for paths of one's own academic development (through the preparation of a grant proposal) is important.

Evaluation:

- ☒ The presented training program guarantees the achievement of learning outcomes for qualifications at the PQF8 level.
- ☒ The program prepares well for independent research.
- ☒ Participation of doctoral students in research projects and publication of results in reputable journals is promoted.
- ☒ The effectiveness of IRP implementation is high (so far, only one person has received a negative opinion during the mid-term assessment and the vast majority of doctoral students submit their dissertations in time, without the need for extensions).

Recommendations:

- ☒ Despite DS's efforts to optimize the basic knowledge block, the training program is controversial among both doctoral students and supervisors. This applies to both the subject matter of the courses and the number of mandatory hours. Some employees believe that there is too much academic knowledge in the training, not enough preparation for experimentation and research. Similarly, some students (especially in Astrophysics) indicate that there are too many general lectures and not research-oriented ones. Ph.D. students feel that they should spend more time on research. The curriculum needs to be reconsidered and modified for the workload of PhD students. It is recommended that doctoral students (especially those in the upper years who have already completed most of the training program) and their supervisors be consulted again to further optimize this block.
- ☒ Improve course offerings for chemistry doctoral students.
- ☒ Within 12 months from the date of commencement of training, the doctoral student, in agreement with the supervisor, develops an IRP containing, in particular, a schedule for the preparation of the dissertation. Not all IRPs presented included this schedule. It needs to be supplemented. Preparation of a suitable template would be helpful for the correct construction of future IRPs.

- **The method of assessing the learning outcomes for qualifications at level 8 of the PQF:**
Verification of learning outcomes is carried out on the basis of clearly defined regulations and publicly available rules. It includes learning activities, which consist of:
 - ☒ Examinations to verify knowledge in individual subjects,
 - ☒ Credit for mandatory seminars,
 - ☒ Verification of foreign language skills,
 as well as research-related activities involving the verification of student achievements obtained in the implementation of IRP, as described in the annual reports, in particular publications in scientific journals, or conference presentations. It clearly shows that a standard system of solutions for verification of learning outcomes has been adopted in DS.

DS identifies the Doctoral Seminar as one of the key tools for the verification of learning outcomes. The involvement of experts from various fields related to the topics of doctoral projects, and individual consultations with these experts during the preparation of the seminars allow a more accurate assessment of the progress of work done by doctoral students and the development of their research projects. The openness of the seminars to all academics from different fields enables in-depth discussions to verify the learning outcomes identified in individual research plans and to verify the development of doctoral students' cross-cutting competencies, such as critical thinking, creativity, initiative, problem solving, risk assessment and decision-making. According to doctoral students, the rules for verification of learning outcomes are clearly defined and objective. The requirements for doctoral students are high.

Evaluation:

- ☒ The mechanisms for verifying the effects are consistent, reliable and in line with the requirements of the PQF8 level.
- Efforts are being made to continuously improve the way verification is carried out, e.g., an annual report that includes a spreadsheet to enable quantitative analysis, or the development of a Promoter's Guide with important recommendations for improving methods of assessing learning outcomes and other aspects of the education process.

- **Qualification of academic teachers and academic staff employed at the doctoral school:**
The presented profiles of lecturers, in both fields, indicate that education in DS is provided by highly qualified academic staff, with an international reputation, considerable scientific achievements and scientific activity. The academic achievements of the teachers are in line with the scope of the education provided. Lecturers also have extensive experience in obtaining grants and are/were promoters (many times). This is confirmed by the fact that on average of 10 people admitted to DS each year, 3-4 people carry out individual projects with funds won by the scientific staff of the institutes forming DS. The school's scientific staff also has a lot of teaching experience, they often point to the list of lectures they give. Recruitment of lecturers is carried out by Discipline Coordinators on the basis of scientific achievements and evaluation of the employee (by the employer), which seems to be a reliable criterion. Lecturers are both employees of the units forming the DS and employees of the University of Warsaw or the Institute of Physical Chemistry of the Polish Academy of Sciences. Regarding the quality of professional development activities for lecturers, DS points mainly to regular staff evaluations in units. It also mentions the preparation of guides for promoters and lecturers containing guidelines for learning outcomes, grading standards and good practices. The committee believes that this is a very valuable and necessary document. The DS also points to the training conducted on "Communication and Collaboration in a Multicultural Team", which is also a very positive activity given the large participation of foreigners in the DS.
Lecturers receive little (due to DS's financial situation) compensation for their lectures, which, according to the Commission, acts as a motivator.
The quality and effectiveness of the education provided by the scientific staff, is evaluated based on questionnaires filled out by doctoral students at the end of classes (semester). Also, interviews between doctoral students and school's staff have proven to be a good evaluation tool. The results are analyzed by the School Council and taken into account when assigning lecturers.
The committee appreciates the opportunity to allow doctoral students from the 3rd or 4th year to teach, with the appropriate competencies. This has a positive impact on the development of skills needed by young scientists and sets a motivating example for other doctoral students.

Evaluation:

- ☒ Staff qualifications meet high academic standards, supporting the realization of learning outcomes.
- ☒ The scientific staff is actively acquiring external funds (grants) for research and recruiting more doctoral students.
- ☒ The scientific staff is highly internationalized, as evidenced by numerous collaborations, trips to perform advanced experiments and numerous publications in important scientific journals.

Recommendations:

- ☒ Implement a regular system for reviewing and improving the quality of education. The results of regular surveys should also be communicated to lecturers so that they can improve their teaching techniques and the content of their lectures.
- ☒ Use of NAWA STER grant funding to invite foreign lecturers of international repute.

- **The quality of the admission process:**

Recruitment for DS is held twice a year. Recruitment is conducted in English, usually remotely. It is therefore accessible to candidates from abroad. The English-language DS website, despite good organization of content, is characterized by an inaccessible graphical layout. A published list of dissertation topics makes it easier for candidates to choose a supervisor and prepare for collaboration. The DS website also includes a guide for students.

Recruitment for DS was divided into two stages:

- ☒ Assessment of the candidate's education, past achievements and motivation relevant to the chosen project. The future promoter plays a decisive role here.

- ☒ An interview consisting of:

- oral exam,
- presentation of achievements,
- discussion of research topics.

The recruitment process is described in detail in the relevant document. The committee carefully selects candidates. The criteria for the first recruitment stage seem subjective, and there are no clear formal requirements. Persons who underwent the second stage of the recruitment process (Interview) and were not accepted are given verbal justification and guidance. Recruitment results are available at the DS office.

DS is making efforts to disseminate information about recruitment to the widest possible scientific circles.

Evaluation:

- ☒ The recruitment process is transparent, accessible to foreigners and favors the admission of candidates with high research potential.

Recommendations:

- ☒ Include an equality representative and a student representative in interviews.

Transparency of the procedure would require the presence of these people on the selection committee, especially when the candidate is disabled or has parental responsibilities. The equality representative and the doctoral student representative do not need to have a voice, but their presence ensures transparency in the recruitment procedure.

- ☒ It is necessary to introduce precise formal requirements for doctoral students at the first stage of recruitment. Candidates after the first stage of recruitment should receive a substantive justification of the decision.

- ☒ It is a good idea to change the order of recruitment interviews, starting with easier issues and ending with more difficult ones. This will help reduce the stress level of candidates.

- ☒ It is recommended to refresh the graphic design of the Doctoral School's website and add tabs with: the recruitment schedule, lists of accepted candidates and resolutions of the DS Council (in accordance with article 200 paragraph 3 of the Law on Higher Education and Science).

- ☒ Monitor the impressions of candidates, both accepted and rejected, for example, by conducting surveys.

- ☒ Adding to the regulations the requirements/duties of the doctoral student and the promoter.

- ☒ Develop a comprehensive promotion strategy to attract more candidates, especially Polish ones.

- **The quality of scientific or artistic guidance, and support in research:**

Promoters in DS are selected from among world-class scientists, ensuring the highest standards of academic care. Criteria for selection are publication record, active participation in international collaborations, conference presentations and success in obtaining research grants.

Doctoral students in DS generally have a good relationship with their supervisors. In case of conflict, doctoral students can always ask for support from DS management and staff.

The annual report is one way to indirectly supervise the quality of promotor care. In addition, feedback from doctoral students is collected during informal conversations and direct contact with the DS administration.

PhD students have full access to research infrastructure, computer resources and licenses for specialized software. DS also provides financial support for the implementation of foreign research trips and participation in conferences (from its own funds and the NAWA STER program).

Evaluation:

- ☒ DS provides a transparent and clearly defined process for appointing and changing promoters, in which the DS Council plays a key role.

- ☒ Supervision of students is conducted at a high level.

- ☒ There are special mechanisms for recruitment of doctoral students from external grants that do not coincide timely with regular DS enrollment.

Recommendations:

- ☒ Inclusion of promoters from outside Poland (necessary modification in DS Regulations) - so far only 3 auxiliary promoters from abroad.

- ☒ Supplemental information on irregular (grant-based) recruitment to DS.

- ☒ Involve representatives of the Doctoral Student Council in finding solutions to conflict situations along the line of promoter/auxiliary promoter-doctoral student-DS authorities.

- ☒ Develop guidelines for the requirements for selecting auxiliary promoters along the lines of the existing analogous promoter selection procedure in DS.

- **The reliability of the midterm evaluation:**

The mid-term assessment is carried out by the Assessment Committee based on: documentation of the course of study in accordance with the curriculum, an oral presentation by the doctoral student summarizing the results achieved in the course of IRP completed with a discussion with the Commission, the opinion of the supervisor, annual reports. The doctoral student does not fill out a dedicated report. All members of the Commission must have a habilitation; at least one must be employed outside the entities conducting DS. A member of the Commission cannot be a co-author of a publication or promoter of a master's/bachelor's thesis, which greatly improves the transparency of the evaluation process. Commission members are selected on the basis of merit and competence in relation to the IRP subject matter.

Evaluation:

- ☒ mid-term assessments are reliable, objective and effectively motivate further action.

Recommendations:

- ☒ There are no regulations in the bylaws regarding appeals of mid-term assessments. This needs to be supplemented.

- ☒ The report shows that the Chair of the Assessment Committee is usually the Discipline Program Coordinator in DS. This could potentially violate impartiality. The committee should be independent and should not include DS executives.

- ☒ Include a representative of doctoral students as an observer, which will improve the transparency of the evaluation.

- ☒ Ability to change IRP more often than once a year.

- ☒ Consider blocking IRP change just before mid-term assessment.

- ☒ DS should take steps to identify elements of the mid-term assessment process that remain insufficient, e.g., in the form of feedback from the Assessment Committee, doctoral students and their supervisors.

- ☒ Ensure correct protocols for mid-term assessment. In particular, they should include direct reference to the statutory criteria. A ready-made template for mid-term assessment will oblige protocol preparers to fill in mandatory entries/information. It can also add a field on comments in the mid-term assessment process for feedback from the Assessment Committee.

- **Internationalisation:**

The staff of the doctoral school is internationally active and comes from different countries. Due to the subject specificity of the school, they regularly conduct research at renowned international research centers, such as CERN. The level of internationalization is very high.

The Doctoral School also conducts internationalization activities through:

- ☒ Recruit foreign doctoral students - they make up the majority in DS.
- ☒ Cooperation within the framework of the Nawa STER project - research visits to leading institutions around the world, lasting from one to three months.
- ☒ Research trips funded by other sources, such as research grants implemented at NCBJ and IChTJ, funds from other research institutions (e.g., CERN) or agencies such as the Fulbright Commission.
- ☒ Provide a budget to enable doctoral students to attend international conferences.
- ☒ Encourage publication in high Impact Factor journals.

The school attaches great importance to the internationalization of the teaching process and the integration of its doctoral students. The doctoral school's website is available in Polish as well as English. Lectures and seminars are conducted in English.

DS is making efforts to conduct dual doctorates. It is currently in the process of signing such an agreement with a university in France.

Particularly praiseworthy is the fact that the DS allows those willing to participate in free Polish language courses organized by the Institute. The units also help their students with accommodation. NAWA's "Welcome to Poland" project also organized a workshop on "Communication and Collaboration in a Multicultural Team," which seems particularly appropriate in DS with a preponderance of foreigners from different countries.

Evaluation:

- ☒ The level of internationalization of DS is very high.

Recommendations:

- ☒ Better support for IChTJ doctoral students on conflict resolution - it is not clear to them who they should report to.
- ☒ Need systemic assistance for foreigners to become more familiar with the conditions of life in Polish society and the required administrative procedures.
- ☒ "Welcome Point" representatives should be more accessible.

- **The effectiveness of the doctoral education:**

The school achieves high educational efficiency, as evidenced by:

- ☒ High number of Ph.D. thesis submitted on time,
- ☒ A significant number of scientific publications by doctoral students and conference presentations,
- ☒ A significant number of long and short internship trips,
- ☒ DS conducts monitoring of careers after completion of PhDs and maintains contact with graduates, especially those who continue research work.

DS mentions in the report that too many doctoral students are dropping out, as statistics show that the most people left DS in the first year of its existence, subsequent years showed improvement. It was a time of pandemic, and the Commission believes that this may have been one of the main reasons for dropouts, perhaps DS was too critical in this aspect of self-evaluation.

Evaluation:

- ☒ DS effectively prepares doctoral students for professional carriers both in academia and industry at domestic and international markets.

Recommendations:

- ☒ In order to demonstrate the effectiveness of education, please give examples of how many papers have been published in reputable journals (e.g. Science, Nature), DS's output is very good and DS should boast about it.

V. FINAL OPINION AND RECOMMENDATIONS

The DS operates on the basis of an agreement between the NCBJ and the IChTJ. The organization of the school is transparent, with clearly defined recruitment procedures, training paths and a system for monitoring the progress of doctoral students. The quality of the research and education provided, as well as the selection of lecturers at the doctoral school, as well as promoters, enable the realization of learning outcomes adequate to the PQF8. The high qualification level of the staff, access to research infrastructure and the adaptation of curricula and verification of learning outcomes translate into high quality of the educational process. The committee appreciates DS's efforts in raising doctoral stipends, faculty honoraria, and conference funding for doctoral students, which DS is undertaking despite the difficult financial situation of the two entities running DS.

The committee commends plans to expand DS in an interdisciplinary direction to include environmental engineering, mining and nuclear power. Education, especially in this last field, seems to be very important in view of the planned construction of a nuclear power plant in our country.

Recommendations:

1. Encourage doctoral students to create formal structures of the Doctoral Student Council and include their representatives in the DS Council and ensure their presence (as observers) during recruitment and mid-term assessment.
2. Improve curricula, especially the basic knowledge block.

Improving the assessment of the quality of education in DS - developing procedures for verifying the opinion expressed by doctoral students in anonymous surveys, greater openness of lecturers to students' comments, and introducing the institution of hospitalization in lectures given.

VI. ASSESSMENT AND REASON

Final assessment
positive

Reason:

After analysis of the self-assessment report and the visitation, the evaluation team made a positive assessment of the Doctoral School of the National Center for Nuclear Research and Institute of Nuclear Chemistry and Technology. The school's organization is transparent, with clearly defined recruitment procedures, educational paths and a system for monitoring the progress of doctoral students. The quality of research and education, as well as the selection of lecturers at the doctoral school and supervisors enable the achievement of learning outcomes appropriate to level 8 of the Polish Qualifications Framework. The high level of staff qualifications, access to research infrastructure and the adjustment of teaching programs and verification of learning outcomes translate into high quality of the education process.

As a result of this, the evaluation team recommends conducting another evaluation of this institution in 6 years, in accordance with art. 259, point 2 of the Act "Law on Higher Education and Science of July 20, 2018 (Journal of Laws of 2024, item 1571, as amended)".

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