

Research Strategy of the J. Heyrovský Institute of Physical Chemistry of the CAS for the period 2025–2029

The J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences is an internationally recognised research institution in the field specialising in theoretical and experimental research of chemical and physicochemical processes at the atomic and molecular level. The Institute's long-term strategy is to support excellent fundamental and applied research, foster cooperation with leading global scientific institutions, and contribute to the training of a new generation of scientists.

The Institute strives to be a leading scientific institution in the field, to contribute to the advancement of scientific knowledge, and to enhance the system of education, training and development of scientists. Emphasis is placed on ethics, significance and international prestige of scientific work. Core values include scientific integrity, a responsible approach to research and principles of equality, which are in line with strategic documents.

The Research Strategy provides a framework for the development and direction of the Institute and its scientific and research activities in the upcoming period. It defines key priorities and objectives that will enable the Institute to respond effectively to current challenges in the scientific world, optimise the use of available resources, and strengthen its international competitiveness. The strategy is essential for long-term planning and systematic development, maintaining scientific excellence, and creating conditions for the transfer of knowledge into practice.

Mission

Our mission is to contribute to the development and deepening of scientific knowledge at the international level, foster discovery, scientific creativity, and push the frontiers of knowledge. We emphasise originality and creativity in exploring meaningful directions in both fundamental and applied research across a broad spectrum of fields related to physical chemistry.

Our goal is to contribute to society, demonstrate the importance of understanding the properties of molecules and materials and the processes that happen within them and to utilise scientific research as a tool for improving the quality of life.

In our activities, we build on and further develop the legacy of Nobel Laureate Professor Jaroslav Heyrovský.

Vision

The vision of the Institute is to become a leading research institution in the field of physical chemistry. We aim to be a highly respected and competitive partner for academic and industrial stakeholders, both nationally and internationally and to attract top scientists from around the world.

We strive to be a role model for other institutions of the Czech Academy of Sciences in the areas of scientific integrity, ethics, research evaluation, data management, and the promotion of the principles of equality.

HIPC strategic objectives in scientific research, development and other creative activities

The primary objective of HIPC's scientific activity is to **push the frontiers of knowledge** through research and related creative activities. Achieving this goal requires the long-term strategic development of the Institute, which encompasses the following areas:

Strategic research orientation and enhancement of research excellence

Innovative and up-to-date research in physical chemistry and related fields: This includes the study of chemical and physical processes at the molecular level, relevant for nanotechnology, biophysical chemistry, and analytical chemistry.

Interdisciplinary research: Strengthening cross-sectoral collaboration that leads to innovative and efficient solutions to research problems, fosters creative thinking, accelerates scientific progress, and supports the application of research results in the real world.

Continuous evaluation of research priorities: A systematic overview and assessment of current theoretical and experimental research directions with the aim of ensuring their alignment with global challenges and societal needs. Emphasis on a balanced risk assessment and potential benefits associated with individual research orientations.

Proof of concept: Preliminary validation of selected research results for transfer involves testing the practical application of scientific findings for the needs of industry, academia or other applications. This process includes identifying commercialisation potential, verifying technological feasibility and assessing the added value for end users.

Development of technology transfer with potential for commercialisation: Development of contacts with the application sphere and collaborating entities, forming of methodologies for establishing spin-off companies, valuation and registration of intellectual property, improving and deepening cooperation with interested stakeholders.

International and cross-sectoral cooperation

Strategic partnerships: Increasing the quality of research and achieving relevant international results is the goal of greater participation in international research cooperation and programmes. Focusing not only on engagement in European Research Area programmes, but also on strengthening cooperation with institutions and organisations outside Europe. These partnerships aim to foster the exchange of knowledge, the sharing of key technologies and the development of interdisciplinary projects covering a wide range of current global challenges. An important aspect also the support of researcher mobility, joint publishing activities and building networks to access new funding sources and innovative research approaches.

Development of human resources and education

Talent development and professionalisation: Investment in the development of researchers and students in research, innovation and creative activities. Continuous education through participation in training courses, workshops, and internships and international research fellowships. Emphasis is placed on the quality of doctoral studies carried out in collaboration with universities, and on

systematic support for postdoctoral students in developing independence, project management skills and publication strategies.

Recruitment of top scientists and talented students: Attracting new highly qualified researchers and developing the competencies of existing staff in scientific departments (through evaluation, training support). Monitoring and acknowledging the research outcomes and innovation activities of both researchers and other staff.

Protection of intellectual capital and support for mobility: Safeguarding of innovative ideas, copyrights and intellectual property to ensure fair and effective utilisation use of research results. This support also promotes international mobility and the strengthening of the scientific community through mentoring.

Safe environment and cultural diversity: Creating a fair, open and supportive research environment in terms of personnel, funding, institutional structure and material resources. An environment that is safe, diverse and accessible to all (free from language and cultural barriers). Ensuring equal opportunities for women and men, including equal representation in leadership and decision-making processes. Supporting work-life balance, age diversity and generational exchange.

Support and management of research: Professional support, sharing of best practices, and systematic training of staff in the management and administration of science. High-quality administrative support contributing to the efficiency of research activities and strengthening the institution's capacity to adapt to legislative and programmatic changes. Emphasis is placed on cultivating an environment that promotes transparency, cooperation and interconnections with national and European research policy. Professional development of administrative staff is an integral part of the strategic management of the Institute.

Infrastructure and technology support

Modernisation of laboratory and research infrastructure: Investment in research equipment, laboratory space and technology platforms to enable cutting-edge research. With an emphasis on operational reliability, measurement quality and access to shared facilities across departments. Strategically managed investments based on the needs of research teams, the condition of facilities, and their potential use in research projects.

Research facilities: Care for the technical condition of buildings and facilities for research activities including renovation, maintenance, and the construction of new capacities. Strategically managed space development considering the expected growth in staff numbers, new technologies and health and safety requirements with the aim of creating an inspiring and functional work environment.

Digital transformation: Implementation modern information technologies, data management, simulation and analysis to increase efficiency and support innovation in research. The application of FAIR principles along with the use of artificial intelligence and automation of data collection improve data management through the entire research lifecycle.

Support for open science: Resource sharing and open science will contribute to greater transparency and wider application of research results. Ensuring open access to research outputs, data and infrastructures through the provision of appropriate repositories, software solutions, internal policies, training, and methodological support.

Institutional support for research activities

The effective implementation of HIPC Research Strategy relies on professional support for researchers provided through specialised departments and internal tools that offer comprehensive services in project management, information systems, legal and organisational support.

Grants and HR department: Streamlining administrative support for the preparation and implementation of research projects funded by national and international sources, providing guidance during proposal preparation, ensuring compliance with the funder's regulations and managing project reporting. Participating in the Institute's HR policy, recruitment and onboarding of employees.

Science department and library: Managing coordination of scientific activities, monitoring of publication outputs and internal and institutional evaluation. The library is transforming towards information resources, citation management tools, open access publishing and research data management.

Technology transfer centre (TTC): Development of transfer of research results into practice, especially in the field of intellectual property protection, licensing, establishment of spin-off companies and negotiations with application partners. Providing professional counselling on contract preparation, valuation of results and identification of commercialisation potential.

Internal regulations and methodological support: Management of scientific activities in accordance with internal regulations, including guidelines for data management, intellectual property protection, research ethics and employee evaluation. Regularly updated methodological guidelines will ensure transparent management and fulfilment of strategic objectives.

Funding and sustainability

Diversification of funding sources: Ensuring stable funding through national and international grant support, income from commercial activities and the private sector. Aiming to increase the share of income generated from knowledge and technology transfer through intellectual property licensing and the targeted establishment of spin-off start-ups with a contractual relationship with the Institute.

Focus on research sustainability: Ensuring long-term financial stability and development of the organisation, including sustainable use of available resources. Ensuring ethical and responsible research practices, promoting cross-sectoral collaboration and transferring research results into practice.

Communication of scientific results and popularisation of science

Raising awareness of scientific work: Ensuring effective communication of research results through academic publishing, education and events for the professional and general public to inspire new generations of scientists, stimulate public interest in science and contribute to a broader understanding of scientific knowledge and its relevance to everyday life.

Presentation of results: Participation in and organisation of national and international scientific conferences, seminars, competitions and publication in peer-reviewed scientific journals are key to the presentation of research results and the exchange of views and experience within the scientific community.

Promotion of interest in the chemical sciences: Focusing on teachers and students of secondary and primary schools, increasing their motivation to participate in activities of the CAS, participation in chemical Olympiads and lectures.

Related documents:

The Concept of the Research Strategy of the J. Heyrovský Institute of Physical Chemistry is grounded in the following strategic documents:

- [National Research, Development and Innovation Policy of the Czech Republic 2021+](#)
- [Strategy for international cooperation in research and development at the J. Heyrovský Institute of Physical Chemistry of the CAS, v. v. i.](#)
- [Concept of development of the activities of the Academy of Sciences of the Czech Republic, LX. Session of the Academic Assembly of the Academy of Sciences of the Czech Republic, Prague, December 13th 2022](#)
- [Communication strategy of the J. Hyrovský Institute of Physical Chemistry](#)
- [Sustainable development strategy of the IFC JH with overall vision in the long term horizon](#)
- [Strategy for international cooperation in research and development at the J. Heyrovský Institute of Physical Chemistry of the CAS, v. v. i.](#)

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