

VÝKONNOSTNÉ ZMLUVY SAV 2024–2026



Stratégia organizácie SAV

Ústav polymérov SAV, v. v. i.

Základné informácie o v. v. i.

Názov

Ústav polymérov SAV, v.v.i.

Štatutárny zástupca

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STRATÉGIA Ústavu polymérov SAV, v.v.i. STRATEGY of the Polymer Institute SAS

Preamble

The Polymer Institute of the Slovak Academy of Sciences (Institute) is a leading research institution in Slovakia specializing in polymer chemistry, polymer (bio)materials, polymer physics, and related interdisciplinary areas. Since its establishment in 1962, the Institute has played a key role in shaping polymer science nationally and contributing significantly to its international development.

The Institute conducts research in four departments: Biomaterials Research, Composite Materials, Molecular Simulations of Polymers, and Synthesis and Characterization of Polymers. Three *Core Topics* and five *Key Topics* define the Institute's scientific focus and visibility at national and international levels.

Core Topics:

- Polymers as biomaterials
- Polymeric materials for mitigating environmental threats
- Multiphase polymer materials with tailored properties

Key Topics:

- Immobilization of pancreatic cells for diabetes treatment
- Electroconductive polymers and (nano)composites
- Radical polymerization kinetics in aqueous solutions
- Photochemically controlled polymerizations
- Confined polymer systems via molecular simulations

This strategy document has been formulated with the input from the Institute Management, Scientific Board, Young Scientists Council, and External Board, consisting of international experts and industry representatives.

Current situation

Research Quality Thanks to a long-standing emphasis on research quality, talent development, and a supportive working environment, the Institute was awarded the highest possible rating ("A") by an international accreditation panel for two consecutive periods (2012–2015 and 2016–2021). This rating recognized the Institute as "internationally leading within the European context" and affirmed its role as a prominent contributor to polymer research in Europe. Despite success and recognition of core and key topics, the high number of small running projects (80–100/year) still causes research fragmentation and administrative burden.

Research Outputs. The Institute has a leading role in research productivity and quality within the Slovak Academy of Sciences. About 90% of published manuscripts are in Q1 and/or Q2 WOS journals. The internal evaluation mechanism is established to financially award the publication outputs based on author contribution and journal impact.

Personnel Development. The Institute emphasizes recruiting and retaining qualified scientific personnel at all levels. The Institute is certified for training PhD students in five PhD programs as the external institution in connection with universities in Slovakia and in Czechia. The quality and progress of the training is monitored through an evaluation system involving semiannual reports and annual presentations at the workshops organized by the Scientific Board. The Institute has been promoting the international exchange programs for PhD students. Additionally, the Institute financially supports PhD students, postdocs returning from postdoctoral stays, and employees returning after the parental leave. A performance-based contract system for postdocs (1–12 years after PhD) is in place to foster the career growth. The aim of this support by the Institute is the commitment to guarantee the conditions for excellence in polymer science.

Main Aims for 2025 -2029:

1. To enhance the Institute's scientific impact and visibility by focusing on core research areas, strengthening collaboration internally and externally, and fostering sustainable partnerships with industry and international institutions.

Strategy Overview:

The strategy prioritizes the focus on Core Research Topics to foster the Institute's globally recognized expertise, to reduce the research fragmentation due to a large number of small projects, and to decrease the administrative burdens. The internal cooperation at the Institute in these topics has been promoted to boost the collaborations with external academic and industrial partners. An inherent part of the Institute strategy is to identify and promote the independent research leaders, to attract talented PhD students, and to make steps to increase the international cooperation, visibility and funding.

The Institute research topics will be developed in conjunction with active seeking for a direct support from industry. For this, the partnerships with private companies will be promoted, including the protection of intellectual property rights and fostering the establishment of spin-offs. Since 2020, the Board for External Communication has been established to enhancing the connection with industry, as one of the tasks of this Board.

Key Actions:

- To support the research in Core and Key Topics with regular re-evaluation of their relevancy to global trends and needs for innovations in polymer science;
- To continuously seek for well-qualified scientific personnel;
- To foster the collaboration with industry via regular meetings with industry representatives;
- To promote the international visibility and exchange of the research staff;
- To organize seminars and conferences;
- To disseminate the results to professionals in polymer science as well as to lay public;
- To modernize infrastructure;
- To hire project managers for boosting the applications for EU funding.

2. To improve the quality and impact of the Institute's publication outputs.

Strategy overview:

The strategy prioritizes enhancing the publication quality over quantity, aiming to boosting the number of papers with first or corresponding authors from the Institute in top journals, including Nature Index, Nordic List Level 2, and journals in the 90–99.99 JIF percentile.

Key Actions:

- To continue regular evaluation of researchers aimed at recruiting high-quality researchers to replace the underperforming ones;
- To dedicate finances for reward the first and corresponding authorship in ≥ 90 percentile journals, Nature Index, and Nordic List Level 2 journals;
- To promote balanced contributions through enhanced internal collaboration and fair distribution of research responsibilities;
- To provide soft skills training for PhD students and early-career scientists;
- To intensify cooperation with leading international research teams.

3. To attract, retain, and develop high-quality researchers and PhD students.

Strategy Overview:

The strategy prioritizes enhancing researcher and PhD student quality by fostering a supportive work environment, modern infrastructure, reduced administrative burdens, and career development pathways, including the education, practical experience, scholarships, and international mobility.

Key Actions:

Personnel Development:

- To ensure high-quality PhD training and career development path from PhD to DSc;
- To increase the number of PhD students funded by external resources;
- To promote young researchers as PhD co-supervisors;
- To internationalize PhD programs;
- To encourage postdoctoral stays abroad and financially support the returning researchers;
- To support applications for prestigious grants (ERC and others).

Research Environment Aspects:

- To create a “good to work here” culture with defined individual roles for each employee;
- To streamline project management and reduce the administrative workload;
- To centralize the support for grant applications;
- To maintain equal opportunity and gender balance conditions;
- To strengthen teamwork;
- To ensure the access to infrastructure;
- To provide transparent career development;
- To promote work-life balance via gym access, flexible home office days, and pension contributions.

Main progress indicators

For the scientific organization, such as the Institute, there is no steady-state situation and the progress is naturally expected. In the long- (5 years) as well as short-term (annually) periods, we will evaluate the progress considering the following indicators:

- a number of European and international projects;
- a number of contracts with companies;
- a number of patents and other protected intellectual property rights;
- a number of licenses to the intellectual property rights;
- a number of new and/or renewed infrastructure;
- a number of publications in top journals with first and/or corresponding author;
- a number of PhD students;
- a number of foreign post-doctoral researchers;
- a number of PhD students and/or post-doctoral researchers funded from external sources;
- a number of researchers with DSc degree;
- a number of high-school students who completed the annually organized Summer Polymer School.

Long-Term Vision by 2035

Main Directions:

- To achieve the international recognition as a center of excellence for research in functional and sustainable polymers.
- To become a key player in polymer research for biomedicine and green technologies in Central Europe.
- To develop interdisciplinary activities in collaboration with biotechnology, materials physics, and nanotechnology fields.
- To utilize the machine learning opportunities and AI integration into relevant research areas.

Human Resources:

- To achieve a more homogeneous age distribution of the high-quality research scientists to ensure continuity in the high-quality research.
- To support the career planning for young scientists.

Societal and Economic Impact:

- To visibly contribute to a sustainable economy through "green" materials.
- To transfer knowledge into practice via spin-off initiatives, licensing, and contract research.
- To popularize science in shaping the public discussion on materials and the role of polymers in the society.

Conclusion

The Institute sees no other future than that of being an excellent research institution with a strong impact on global polymer science. This strategy (and Action plan) list the proposed directions to achieve this goal.

A number of these tasks obviously cannot be realized without applying the recommended and systematic action steps by the Slovak Academy of Sciences and Slovakian research space that have been recommended by the international accreditation panel of experts, to which the Institute strategy will be immersed.

Approved by the Institute Management and Scientific Board of the Polymer Institute SAS.

June 2025