

***The Institute of
Solid State
Physics,
University of
Latvia
Strategy 2016 –
2026***



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Abbreviations

| | |
|---------------------|--|
| BSR | Baltic Sea Region |
| CAMART ² | Excellence Centre of Advanced Material Research and Technology Transfer |
| CAMART | Excellence Centre of Advanced Material Research and Technology |
| CoE | Centre of Excellence |
| EC | European Commission |
| ERDF | European Regional Development Fund |
| ESIF | European Structural and Investment Fund |
| EU | European Union |
| EUR | Euro |
| FM&NT | Functional Materials and Nano Technologies |
| FTE | Full Time Equivalent |
| GDP | Gross Domestic Product |
| H2020 | EU Research and Innovation programme for 2014 - 2020 |
| ICT | Information and Communications Technology |
| ISSP UL / ISSP | Institute of Solid State Physics of the University of Latvia |
| KET | Key Enabling Technologies |
| KPI | Key Performance Indicators |
| KTH | KTH Royal Institute of Technology |
| NIF | National Institutional funding |
| PhD | Doctor of Philosophy degree |
| RDI | Research, Development and Innovation |
| RIS3 | European Union scientific strategy “Smart materials, technology and engineering” |
| TRL | Technology Readiness Level |

Strategy

1. Introduction

The Institute of Solid State Physics, University of Latvia (ISSP UL), is the leading research Centre in Latvia, which can provide internationally competitive research in materials science, educate students in modern technology and material studies, and provide innovative solutions for industrial applications.

In 2001, the European Commission acknowledged Institutes international competence by assigning the "Excellence Centre of Advanced Materials Research and Technology" award. In 2013, Technopolis group performed research assessment of the research performance of Latvian scientific institutions. The ISSP UL achieved number one rating among institutions evaluated by the panel of Natural Sciences and Mathematics and placed as the second best rated research institution of Latvia.

To further foster its excellence in material sciences, the management of ISSP UL in collaboration with PricewaterhouseCoopers has developed a Strategy, presenting the vision for 2016- 2023 and beyond. The Strategy goals and action plans are prepared taking into account the growth targets of the ISSP UL and serves as management's decision-making tool.

This Strategy document puts forward ISSP UL Vision, Mission, Research directions, Strategic goals, Tasks to achieve the Strategic goals and their Indicators. The Strategy is supported by SWOT and PEST analysis, Research Programme, Institutional development plan, Human Resources development plan.

2. Vision

ISSP UL vision is sustainable growth of excellence in material sciences in order to contribute to research, development and innovation at the World level by creating and maintaining competitive research environment and world-class scientists.

In order to achieve its strategic vision goals, ISSP UL will focus and develop excellence in those research areas where advanced competences exist by balancing Public and Private research funding and by establishing long-term strategic relationships and will leverage to maximal extent the H2020 CAMART2 project possibilities.

3. Mission

The mission of ISSP UL is to transfer Excellence in material sciences into highly educated people and innovation. ISSP will serve as a knowledge base and key enabler for materials physics developments of relevance for academia and for the successful establishments of new companies – by developing scientific excellence, by establishing strong networks with academia and industry for knowledge exchange, by educating new generations of students, by spinning of business, and by technology transfer to industry.

4. Research directions

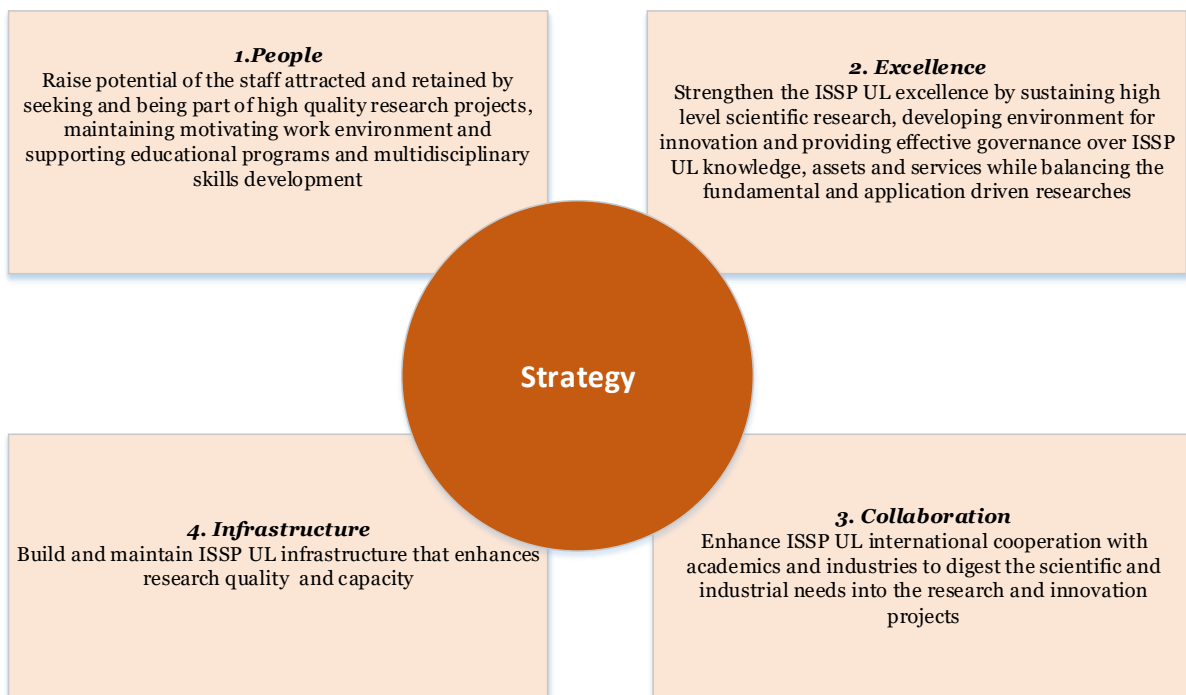
The main research directions of ISSP UL research for the 2016 – 2026 are the following:

1. Functional materials for electronics and photonics;
2. Nanotechnology, nanocomposites and ceramics;
3. Thin films and coating technologies;
4. Theoretical and experimental studies of materials structure and properties.

The ISSP UL Research Programme is providing further breakdown and analysis of each research direction. ISSP UL will work towards achieving strategic goals by putting the focus on the main research directions.

5. Strategic goals

The ISSP UL has defined its strategic goals for 2020 that are structured into 4 domains. The strategic goals are further cascaded down into priorities and action plans, which are considered part of this strategy. The strategic goals are:



By implementing strategic goals, ISSP UL aims to improve its scientific outcomes, foster its capability in innovation and enhance its technology readiness levels, while adopting to and supporting the cultural and infrastructure changes. There is a good indication that the ambitions to reach the ISSP UL strategic goals can be sustained if the ISSP UL management and staff will commit and follow the strategy. The ISSP UL already has established grounds for fostering the capability and capacity growth which shall be further developed through an infrastructure development project, and the CAMART² project 2nd phase to be implemented during the period 2017-2024.

In order to achieve the strategic goals between 2016 – 2026 ISSP UL is looking to address the challenges of changing the internal structure to one, which best supports the stakeholder needs, by changing the internal culture and product development environment to drive innovation and substantially increasing the collaboration with the academic and industry companies, raising the capacity of research.

5. Strategic key performance indicators

| Key performance and outcome indicators | 3 year average (2015 last) | 2019 | 2023 | 2026 |
|--|-------------------------------|------------------|-------|-------|
| Research | | | | |
| Number of scientific publications according to “Scopus” | 120 | 200 | 300 | 400 |
| Fraction of scientific publications in Int. Collaboration (%) | 51 | 55 | 60 | 65 |
| Number of citations/year according to “Scopus” | 1600 | 2000 | 2500 | 5000 |
| Average SNIP per publications | 0,80 | 1,00 | 1,10 | 1,25 |
| Number of scientific and technical personnel (Full Time Equivalent – FTE) | 105 | 135 | 150 | 175 |
| Gender balance of scientific and technical personnel (% female) | 25 | 30 | 35 | 40 |
| Innovation | | | | |
| Number of industrial research projects | 7 | 10 | 15 | 20 |
| Number of Latvian industrial research projects | 7 | 8 | 11 | 13 |
| Number of international industrial research projects | 0 | 2 | 4 | 7 |
| Number of international patent applications | 3 | 3 | 5 | 7 |
| Number of application-related scientific publications (i.e. co-authors from industry) | 4 | 8 | 15 | 20 |
| Contribution to regional high-tech industries and new jobs (transfer from ISSP to industry) ¹ | - | - | - | - |
| Contribution to regional high tech industry – turnover ¹ | - | - | - | - |
| Highest TRL level reached at ISSP | 2 | 3 | 5 | 6 |
| IP licensing (number) | 0 | 0,3 ² | 1 | 1 |
| Number of spin-off companies established | 0 | 0,3 ³ | 1 | 1 |
| Number of (external) users in the Open Access Lab | 2 | 5 | 10 | 20 |
| Turnover of external projects in the Open Access Lab | - | 900 | 1700 | 2300 |
| Education quality | | | | |
| Number of Master theses elaborated | 11 | 15 | 20 | 25 |
| Number of Doctoral theses elaborated | 4 | 7 | 10 | 13 |
| Number of international PhD students | 0 | 2 | 6 | 10 |
| Number of international Post doctorates | 0 | 1 | 3 | 5 |
| Gender balance of students with Master’s thesis elaborated at ISSP (Male/Female, %) | 57/43 | 50/50 | 50/50 | 50/50 |
| Gender balance of students with PhD thesis elaborated at ISSP (Male/Female, %) | 77/23 | 75/25 | 70/30 | 60/40 |
| Graduates employed in Latvian high-tech industry (with thesis elaborated at ISSP) | 2 | 5 | 7 | 10 |
| Graduates employed in international high-tech industry (with thesis elaborated at ISSP) | 0 | 1 | 2 | 4 |
| Outreach and networking | | | | |

¹ Measurement methodology will be developed during market research studies, as at the moment there are no relevant statistics available

² 1 licencing in 3 years

³ 1 spin-off in 3 years

| | | | | |
|---|-------|-------|-------|-------|
| Number of companies involved in active networking activities with ISSP | 25 | 45 | 80 | 120 |
| Number of research institutions in active networking and collaboration activities with ISSP | 40 | 60 | 90 | 150 |
| Research and innovation financial intensity (thousand EURs) | | | | |
| Total | 2 978 | 6 900 | 8 450 | 9 100 |
| Total CAMART ² funding excluded | 2 854 | 4 800 | 7 500 | 9 100 |
| National funding | 1 477 | 2 500 | 3 500 | 4 000 |
| ESIF projects funding (without infrastructure) | 579 | 800 | 1 000 | 0 |
| International Projects (with public funding) | 509 | 1 000 | 2 000 | 3 400 |
| Industrial funding | 289 | 500 | 1 000 | 1 700 |
| H2020 Widening Participation - CAMART2 project funding | 124 | 2 100 | 950 | 0 |
| Infrastructure development funding | | | | |
| RDI Infrastructure funding | 789 | 5 100 | 600 | 750 |

All numbers given are 3 years average (listed year and 2 previous) to avoid impact of fluctuation.