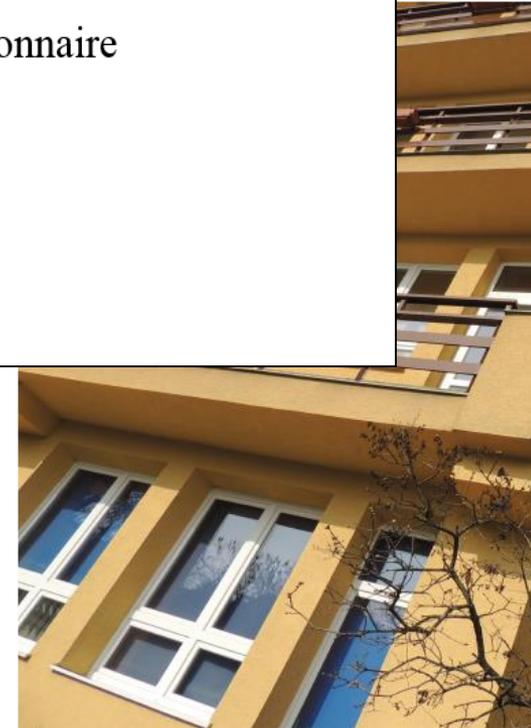
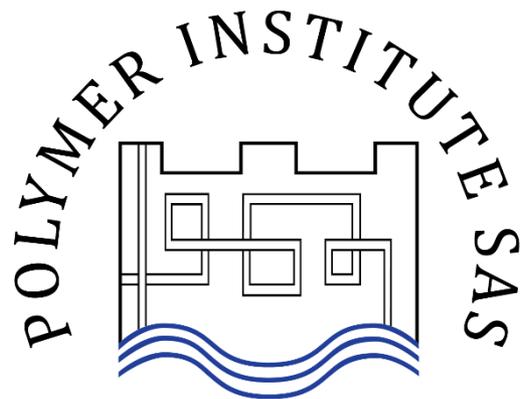


Evaluation of Polymer Institute SAS by the International evaluation panel (Nov 24 2016)

Agenda

- | | | |
|---------------|---|--|
| 14.30 - 14.35 | | Opening and introduction of the Evaluation Panel Members (Member of the Accreditation Committee) |
| 14.35 - 14.55 |  | Presentation of the institute and its results (director and/or representatives of selected research teams) |
| 14.55 - 15.15 | | Discussion to the presentation and to the questionnaire |
| 15.15 - 15.40 | | Discussion with institute research community |
| 15.40 - 16.00 | | Discussion with PhD students (closed section) |
| 16.00 - 16.20 | | Visit of institute infrastructure (laboratory) |
| 16.20 - 16.30 | | Conclusions (closed section) |





Polymer Institute SAS

2012 - 2015

Igor Lacík
Director

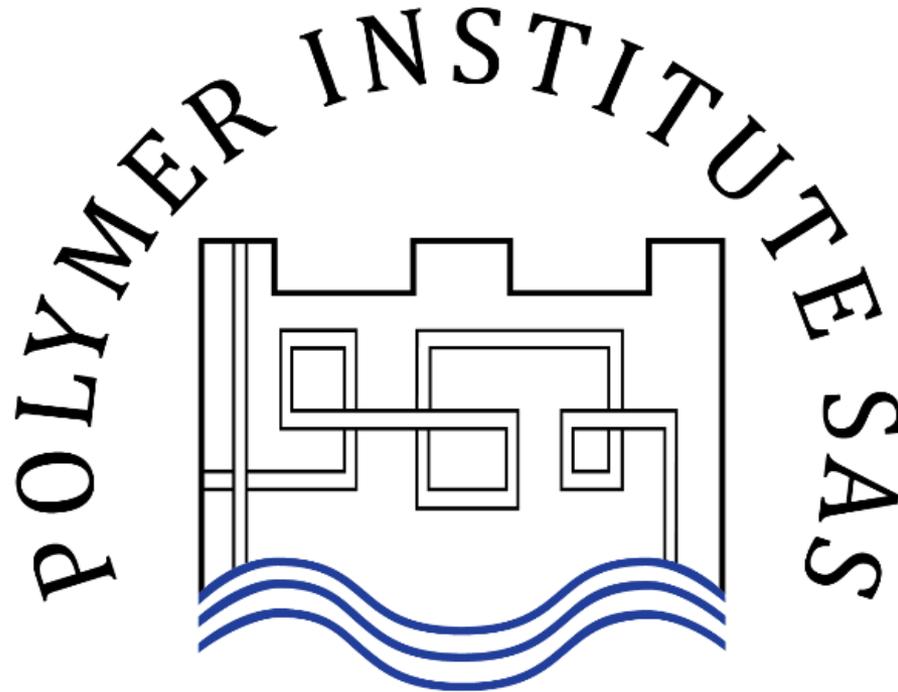
Evaluation Nov 24 2016

Polymer Institute SAS
Dúbravská cesta 9
845 41 Bratislava 45
SLOVAKIA



polymer.sav.sk

Evaluation is a milestone



November 24 2016: A new logo of Polymer Institute SAS

Introduction of Polymer Institute SAS

In 2017 we celebrate the 55th anniversary

Dec 17 1962:

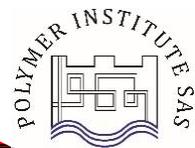
The Polymer Laboratory was established by Dr. Milan Lazar from The Laboratory of synthetic polymers of The Institute of wood, cellulose and chemical fibres SAS



Sep 12 1966:

Polymer Institute of the Slovak Academy of Sciences

Mission



The excellent research in the areas of synthetic polymers, natural polymers, and polymeric materials, which is focused on fundamental and applied research in the contemporary topics of polymer science and which globally contributes to the knowledge in this area.

The institute is the research and education center that in parallel to the research activities acts as an external education institution in the areas of macromolecular and physical sciences as well as in other relevant scientific areas.

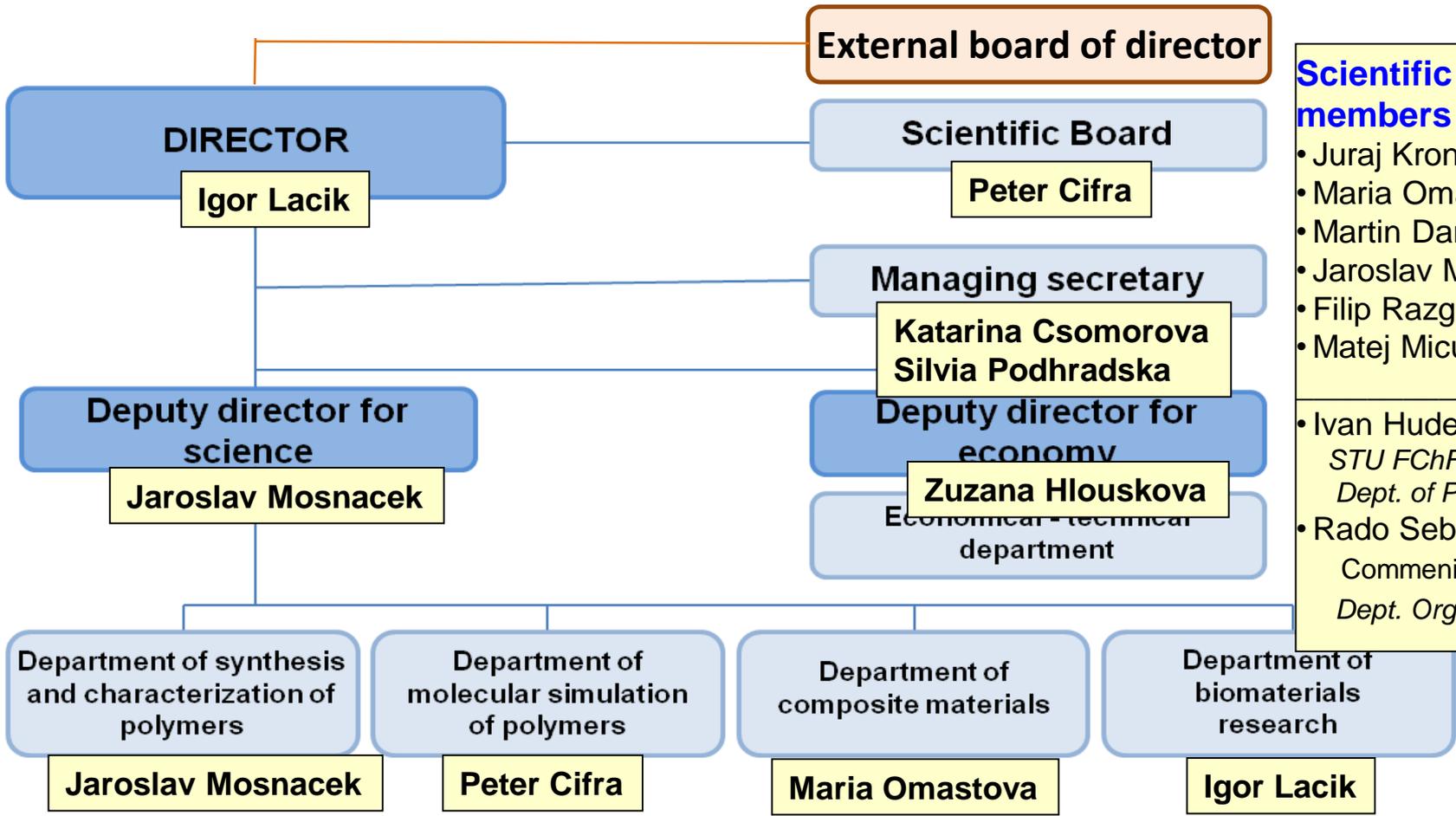
The institute provides the specialized services, which include consultations, infrastructure and innovative solutions for partners from academic institutions, universities and industry both nationally and internationally.

Nationally, the institute has a significant position in the area of polymer science and disseminates the information to the public about research activities, obtained results and applications.

Organization structure

External board members

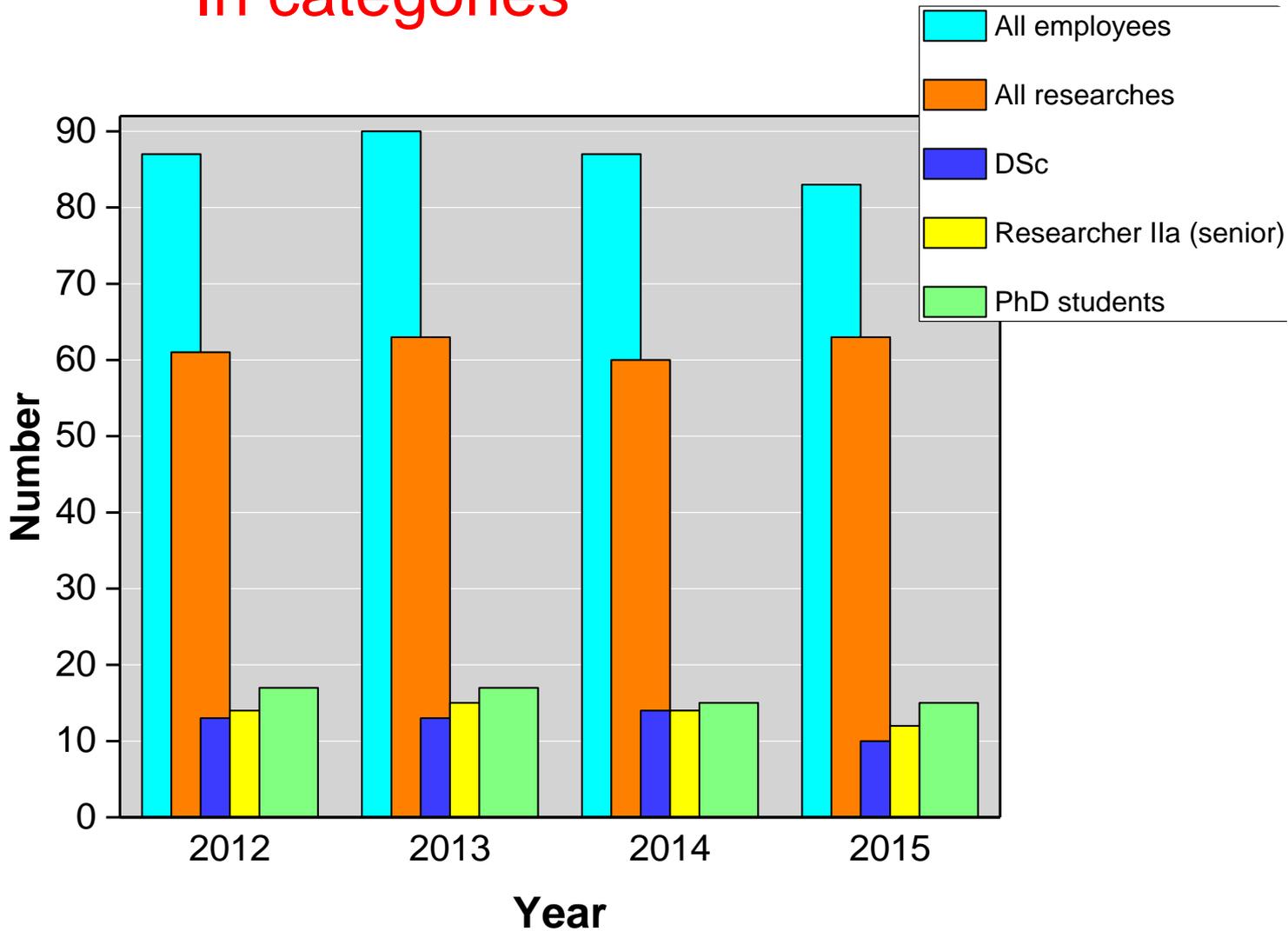
- Frantisek Rypacek (IMC, CR)
- Robert Liska (TUV, A)
- György Marosi (UTE, H)
- Christos N. Likos (VU, A)
- Jozef Kristofcak (industry, SR)



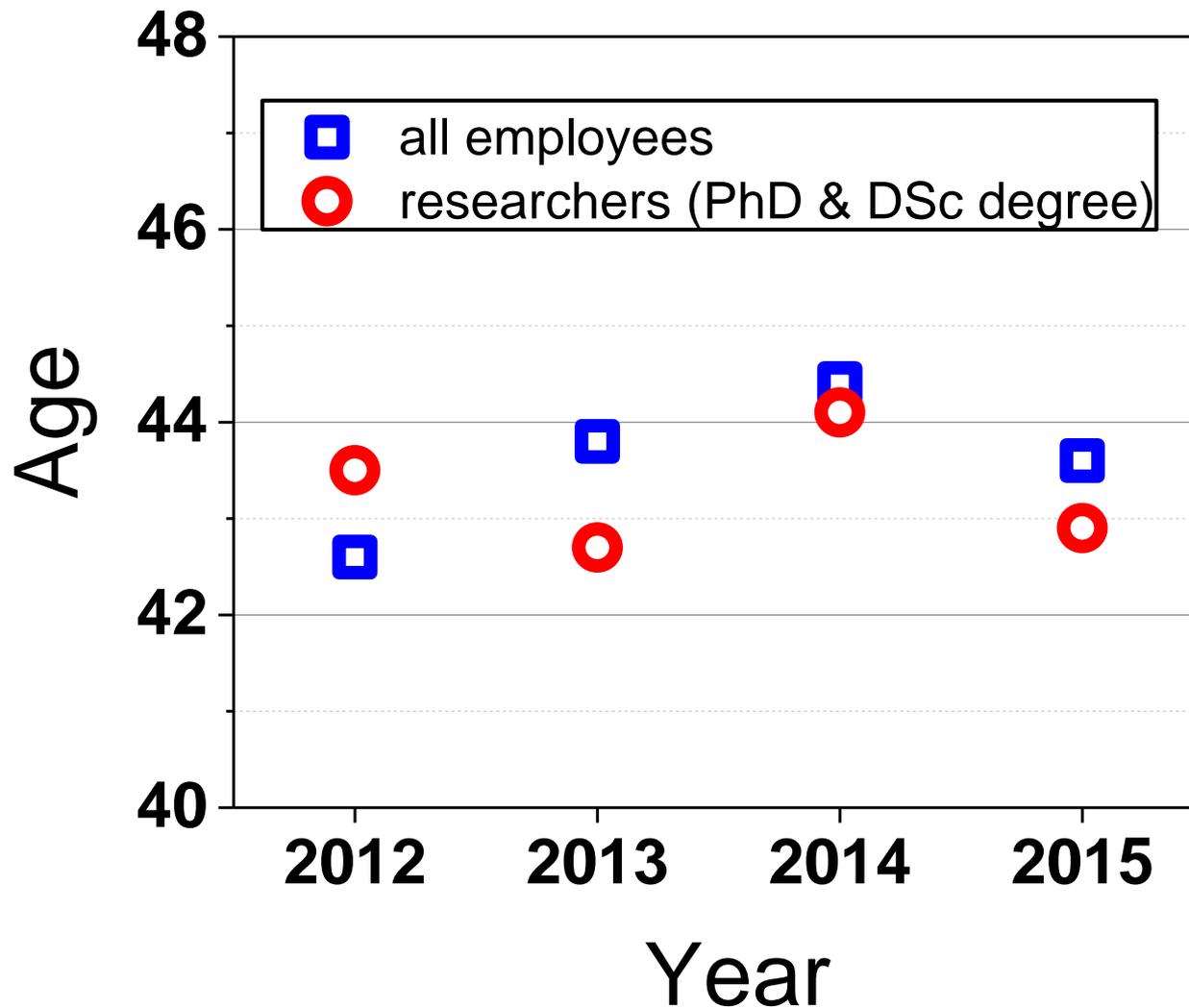
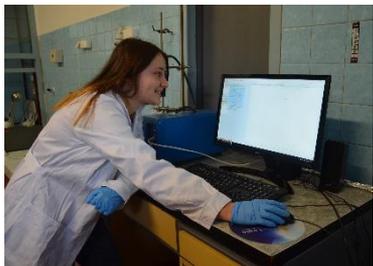
Scientific board members

- Juraj Kronek
 - Maria Omastova
 - Martin Danko
 - Jaroslav Mosnacek
 - Filip Razga
 - Matej Micusik
-
- Ivan Hudec (ext.)
*STU FChFT
Dept. of Polymers*
 - Rado Sebesta (ext.)
*Comenius Uni.
Dept. Org. Chem.*

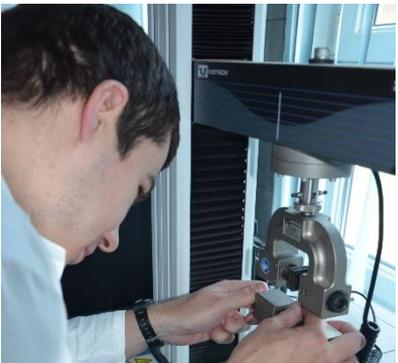
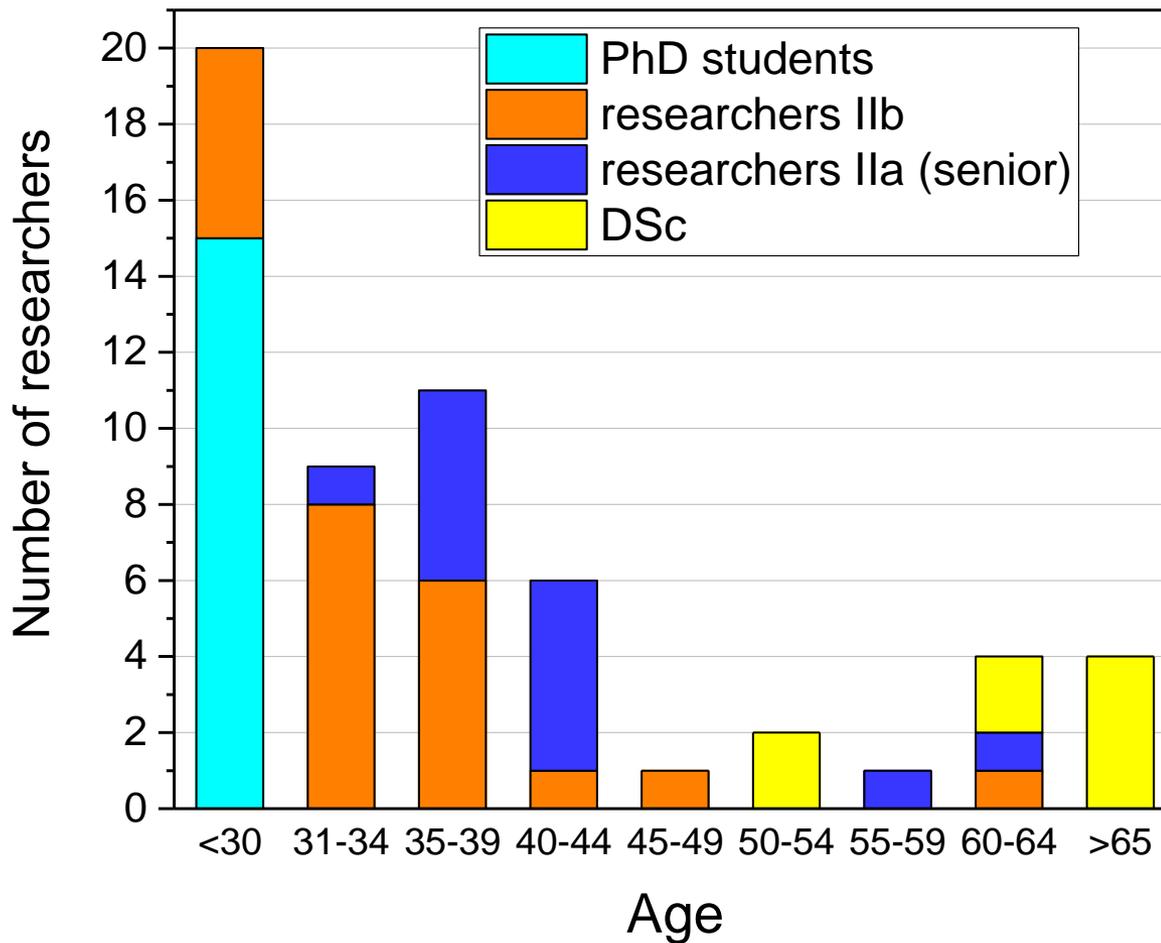
In categories



Personnel



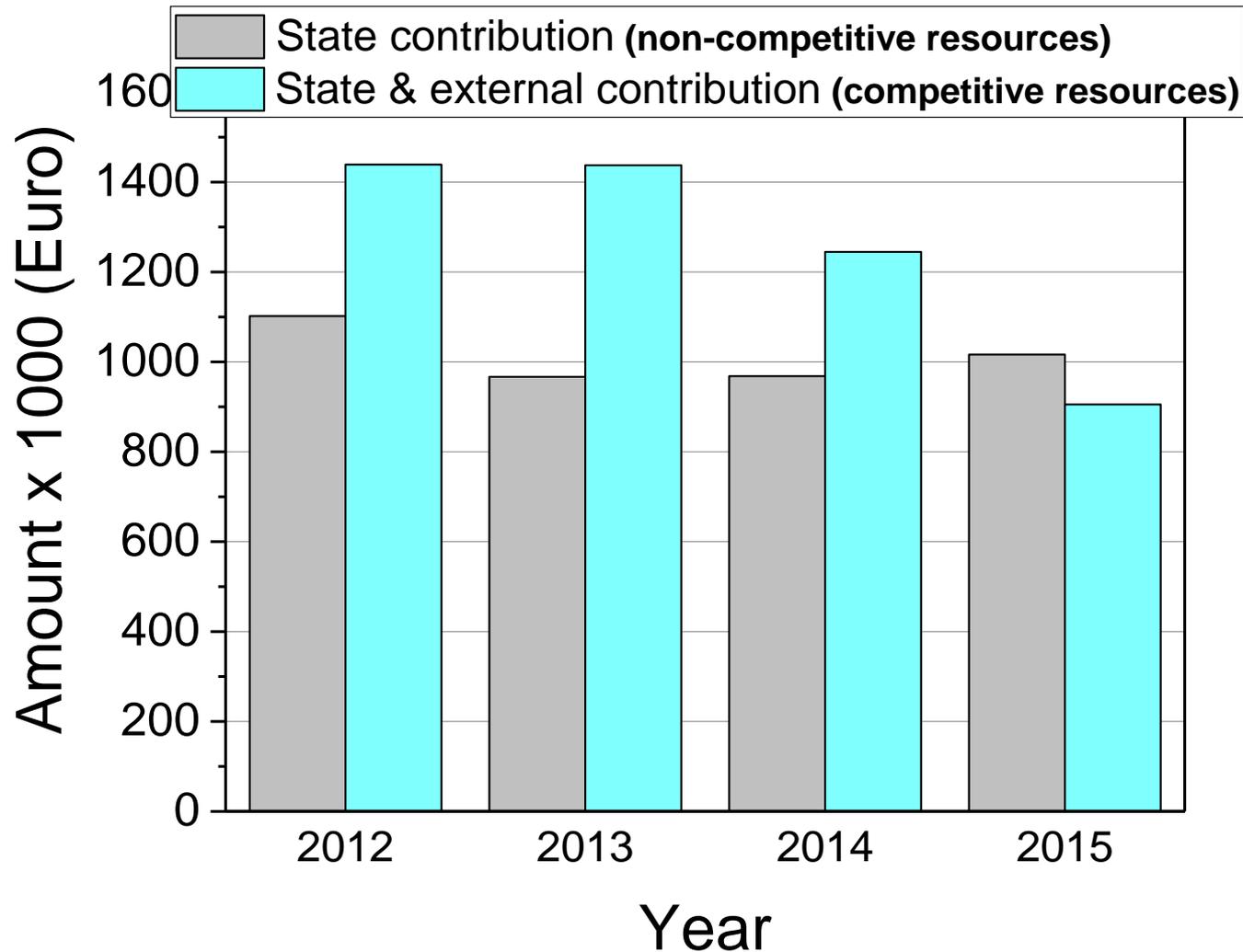
Age distribution of researchers (12/2015)



Budget

Budget

A contribution organization (since Jan 1 1993): **state + external contribution**

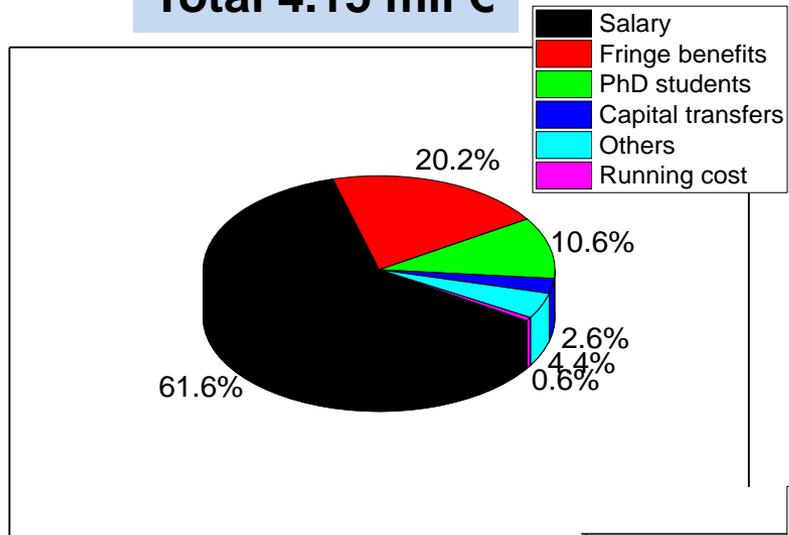


2012 - 2015

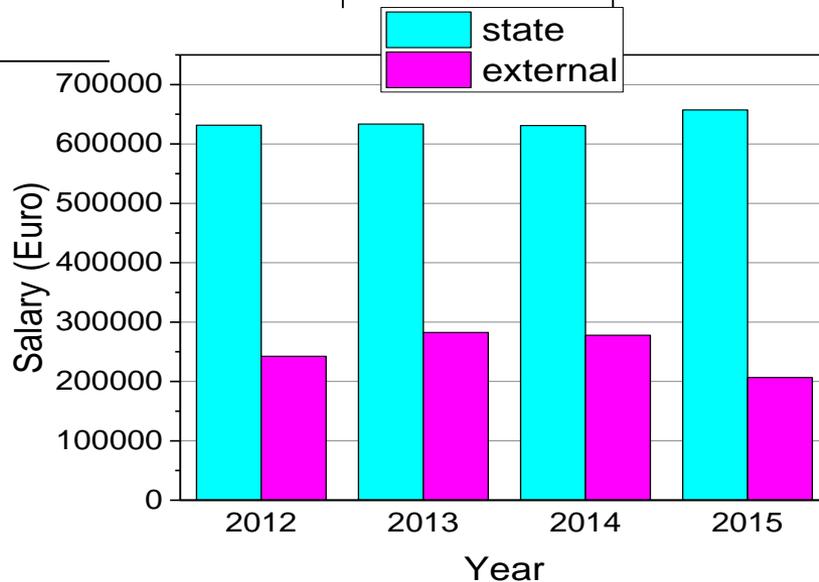
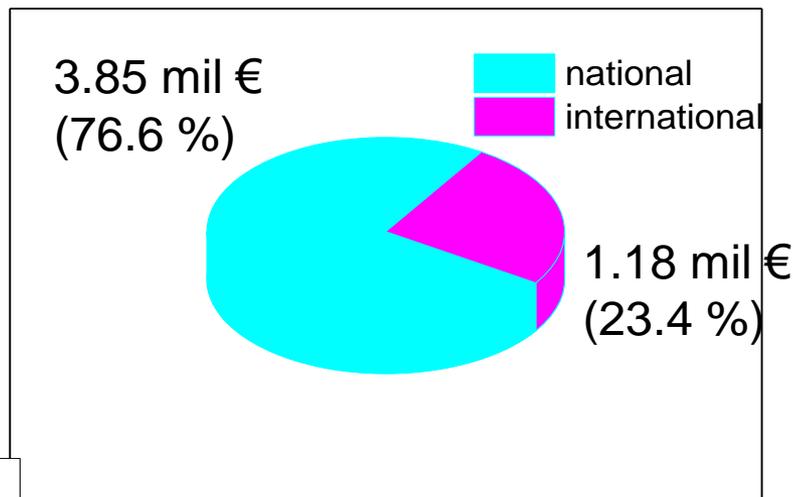
Non-competitive resources

Competitive resources

Total 4.15 mil €



Total 5.03 mil €



Salary

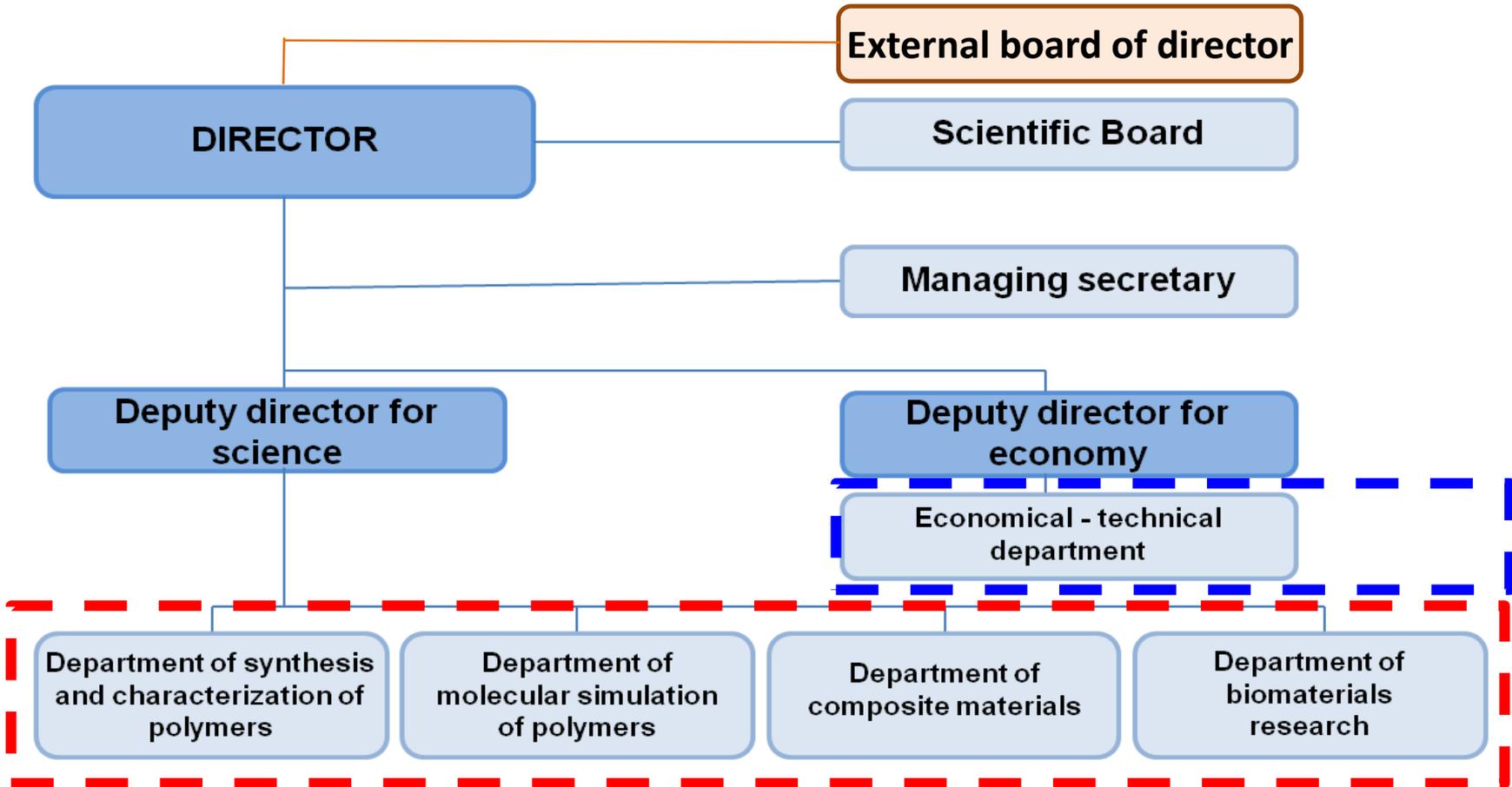
2.6 mil (state)

1.0 mil (external)

Research and Development

Research Departments

4 research departments



Department of Synthesis and Characterization of Polymers (Head: Jaroslav Mosnacek)



- Reversible deactivation radical polymerizations
- Polymers from renewable monomers and natural polymeric materials
- Photochemical studies of small molecules and polymers
- Inorganic nanoparticles and hybrids
- Degradation and stabilization of polymers
- Structure and physico-chemical properties of polymers

Department of Composite Materials (Head: Maria Omastova)



- Carbon based nanoparticles for smart materials
- Antibacterial graphene/polymer nanocomposites
- Surface treatment of textiles
- Biodegradable bioplastics-based materials
- Electrospinning of polymeric nanofibers
- Antibacterial modification of polymers by cold plasma

Department of Molecular Simulations of Polymers (Head: Peter Cifra)



- **Molecular computer simulations of polymers** using (i) coarse-grained Monte Carlo, and (ii) atomistic or coarse-grained molecular dynamics
 - geometrically confined polymers
 - modification of solid surfaces
 - supercoiled DNA molecules

Department for biomaterials research (Head: Igor Lacik)

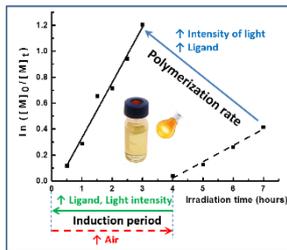
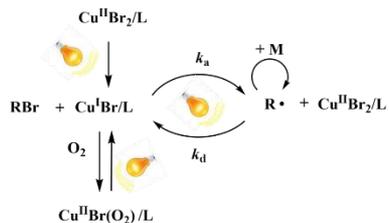


- Encapsulation of living cells towards the diabetes treatment
- Polymers for anti-cancer therapy
- Biomaterials based on 2-oxazoline chemistry and zwitterions
- Evaluation of biocompatibility of polymers and polymeric materials
- Free-radical polymerization of water-soluble monomers

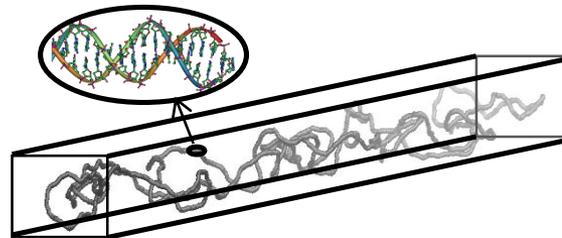
Research and Development

Where we have formulated global trends in polymer science

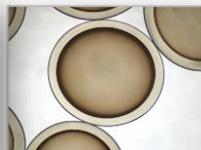
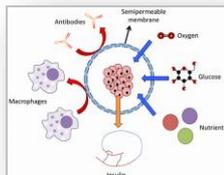
- Photochemically induced reversible deactivation radical polymerization techniques (photoATRP)



- Understanding confined polymers through molecular simulation



- Immobilization of pancreatic cells for diabetes treatment



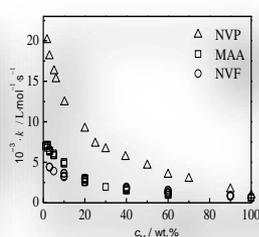
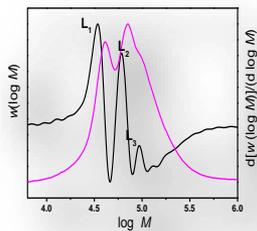
JDRF IMPROVING LIVES. CURING TYPE 1 DIABETES.

- Chemiluminescence (research & instrument)



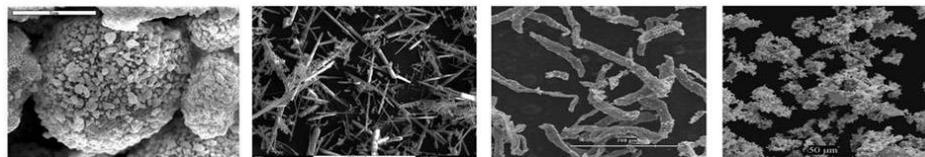
Lumipol 3

- Mechanism and kinetics of free-radical polymerization in aqueous solutions



BASF
We create chemistry

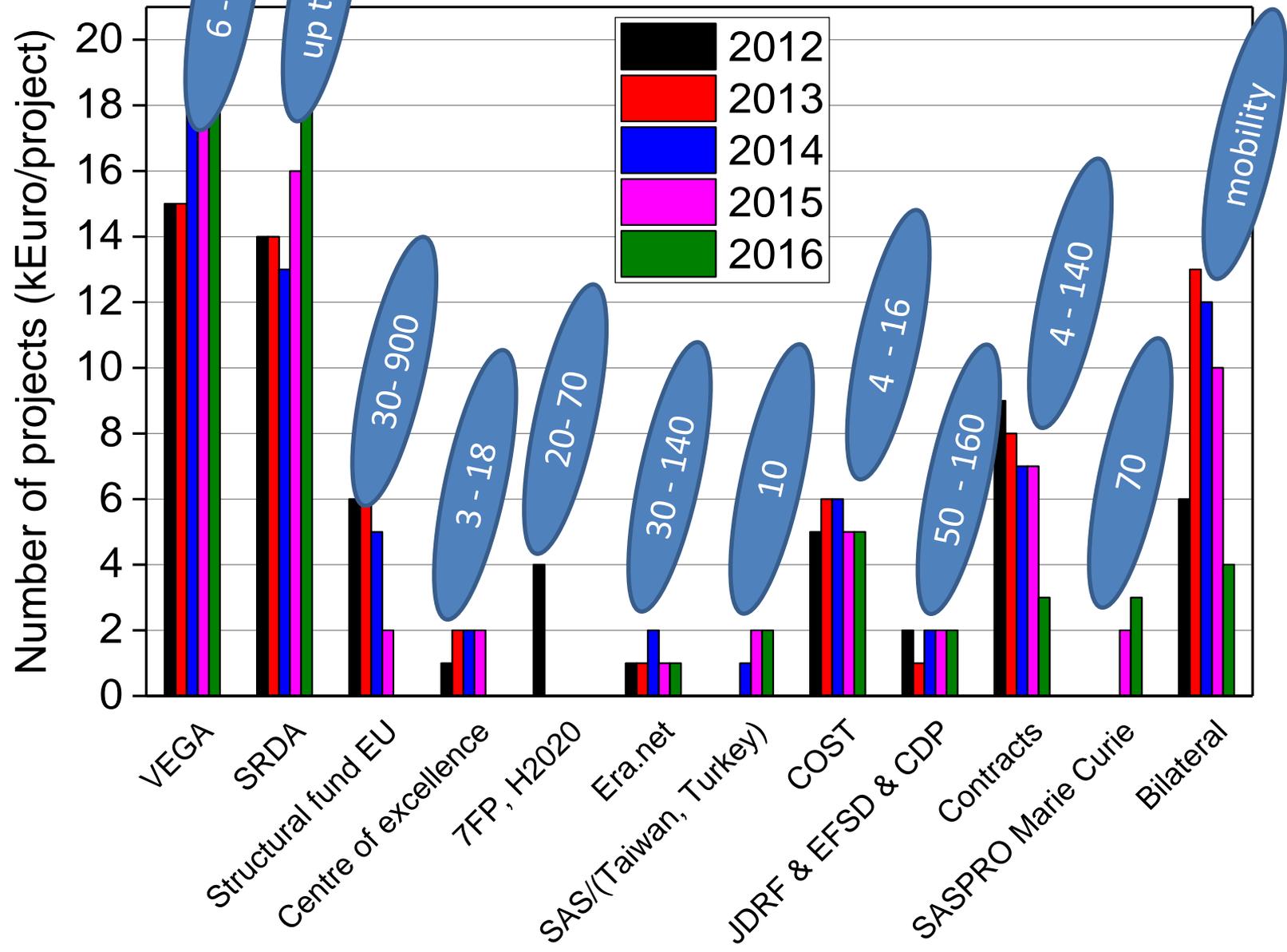
- Electroconductive polymers, composites and nanocomposites



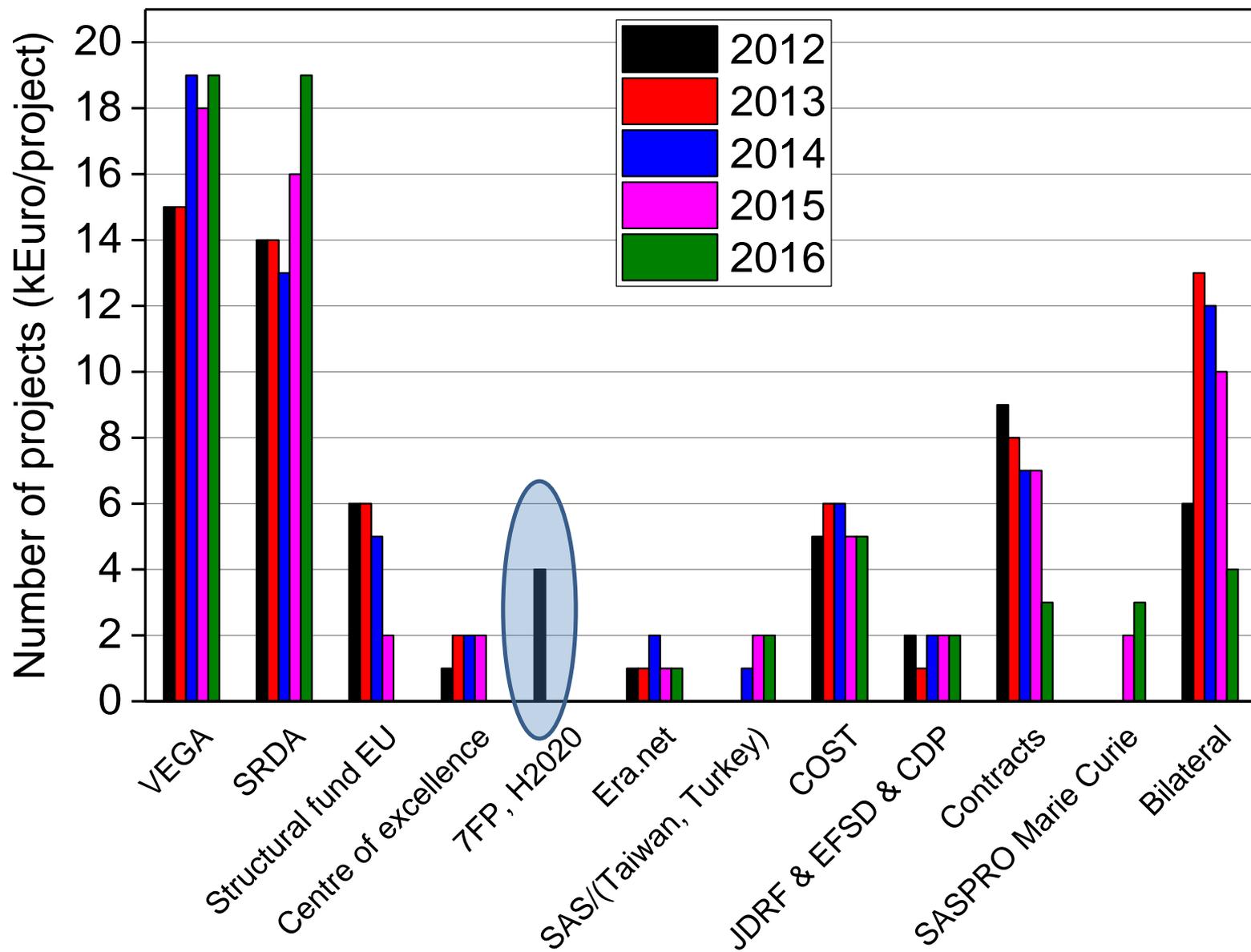
Research and Development

Projects

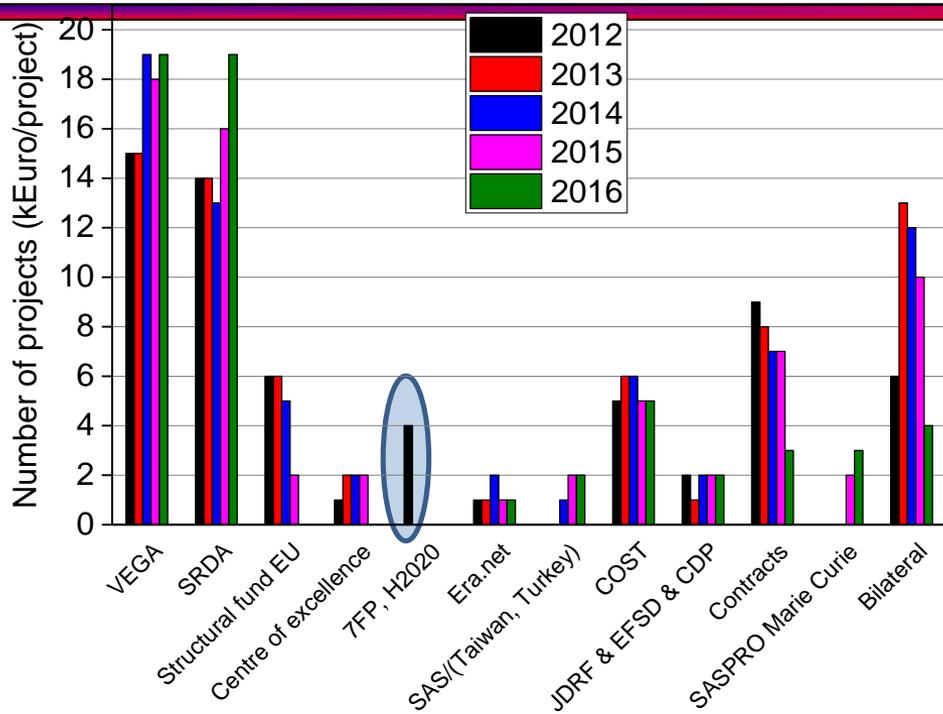
Projects



Projects



Projects



Project proposals submitted to 7RP or H2020	2012	2013	2014	2015
Institute as coordinator	0	0	0	0
Institute as participant	7	2	10	5

1 x ERC starting grant

2x GRAPHENE Flagship, 2x FET, etc. (~14/15 points insufficient)

Contracts

Kinetic coefficients and models for existing and future polymerization processes and systems at BASF, BASF SE, Ludwigshafen, Germany

Technological procedure for preparation of poly(L-lactide) (PLLA) by polymerization of L,L-dilactide (L-Lactide, L-LA) with defined properties Tau-Chem, s.r.o., Bratislava, Slovak Republic

Monomers for adhesive polymers in dental composites; partner: IVOCLAR VIVADENT, Liechtenstein

New phase change materials with improved heat transfer properties: Qatar University, Doha, Qatar

Production of connections to chemiluminescence device for UV irradiation; DSM, The Netherlands

Construction of Lumipol 3, Queensland University of Technology, Brisbane, Australia

Development and characterization of alginate microbeads for cell encapsulation, Beta Cell NV, Brussel, Belgium

Evaluation of electrically conductive nanosols parameters, VÚTCH-Chemitex s.r.o., Slovak Republic

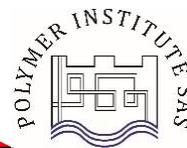
Bonding of ultrasound transducers, Ecoson, spol s r.o., Nové Mesto n.V, Slovak Republic

Electrically conductive adhesive Gravipol Electro, SOS Electronic spol. s r.o., Košice, Slovak Republic

Study of high temperature effect on mechanical properties of membrane blends based on butyl rubber as a result of plasticizers loss, Continental, a.s. Púchov, Slovak Republic

The Member of Automotive Cluster Slovakia

The Member of Slovak Plastic Cluster



Infrastructure



XPS K-Alpha
ThermoFisher Scientific



Nanoindenter Hysitron TI-750



Conical calorimeter



Infrared spectrometer with microscope



Microcompounder DSM

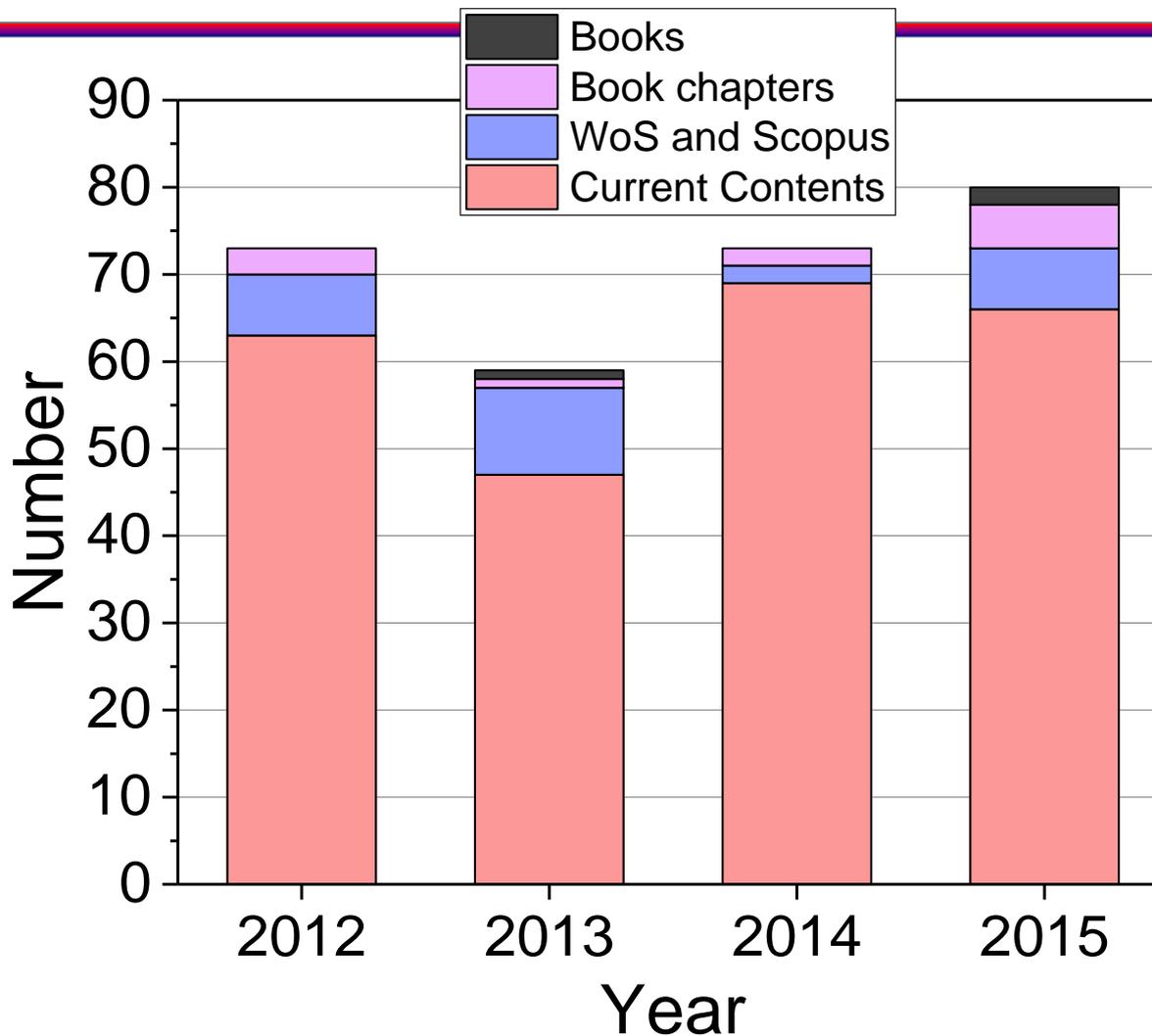


Fluorescence lifetime determination

Research and Development

Outputs

Publications



- ~ 1 publication/FTE
- ~ 45 % PI SAS is the corresponding affiliation
- IF > 3 for ~ 50 % of publications in y. 2015

Publications

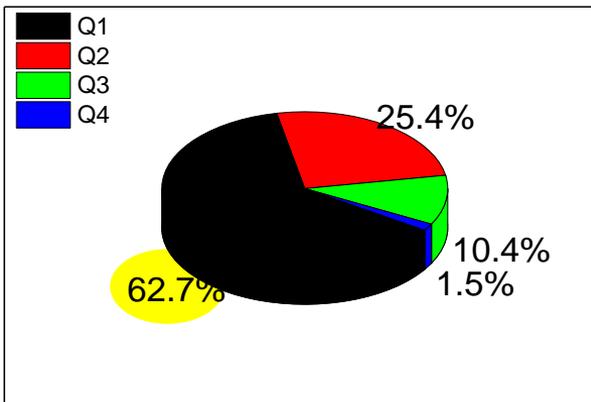


Where we publish?

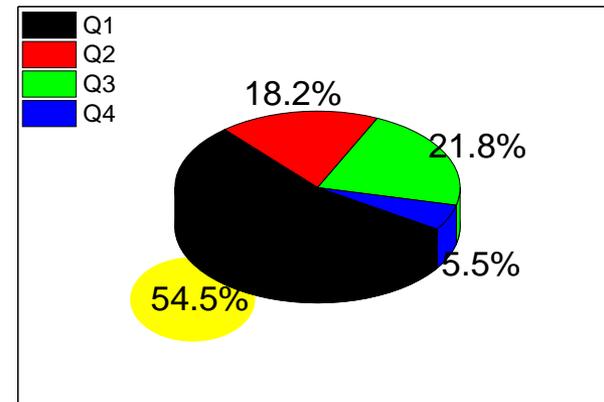
Quartiles of journals
2012 - 2015

(see exhibited information)

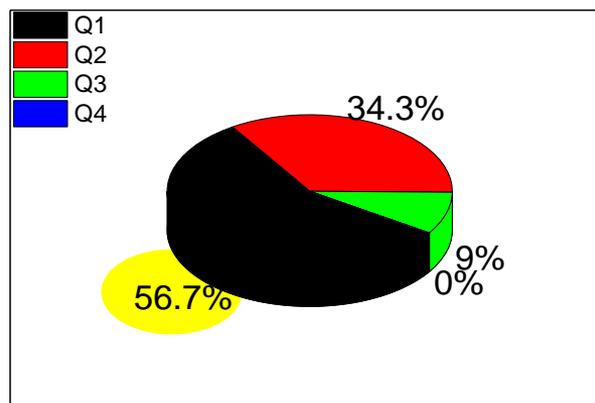
2012



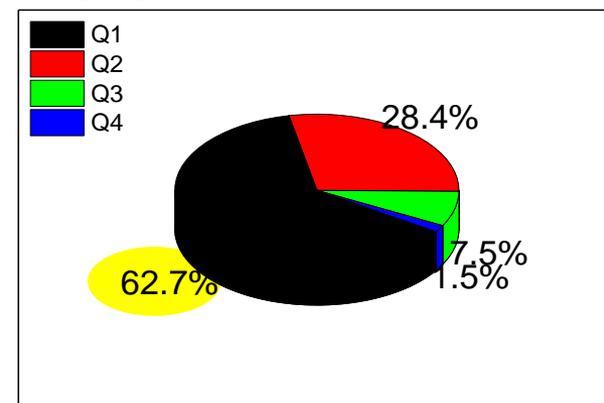
2013



2014

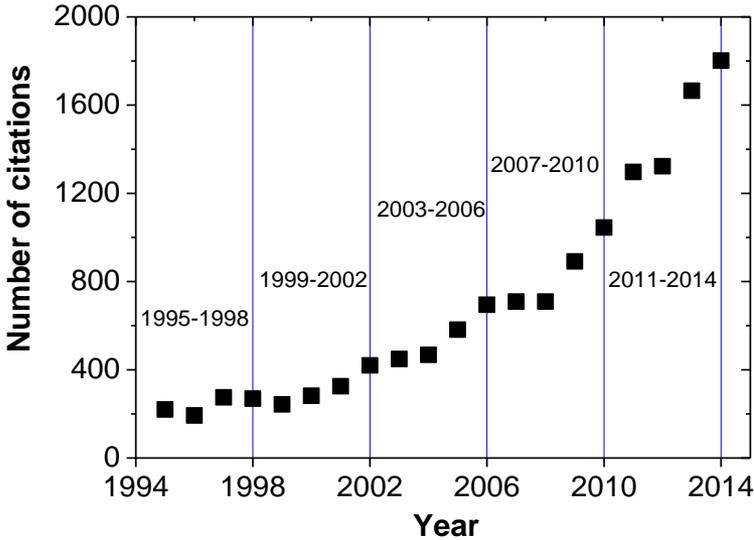
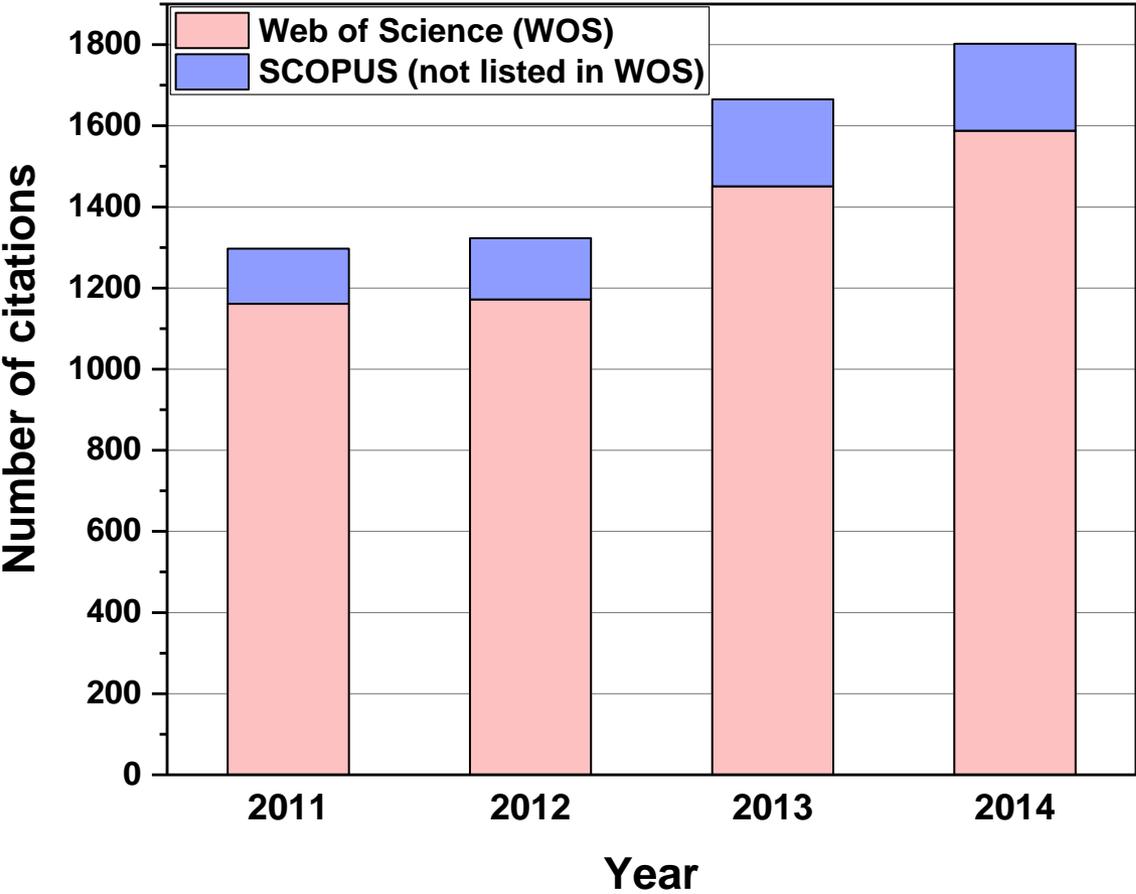


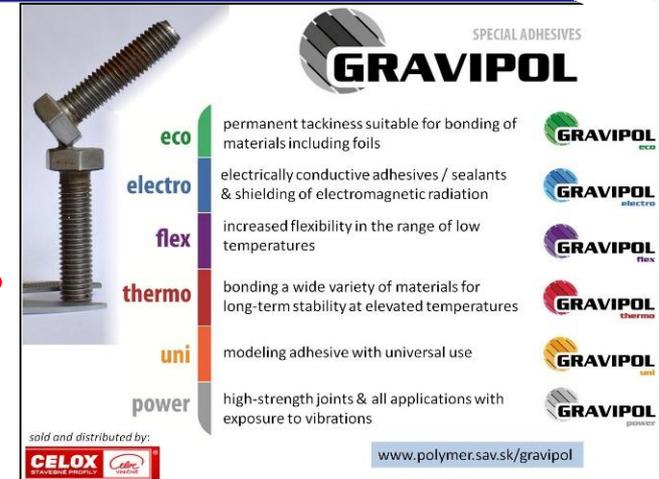
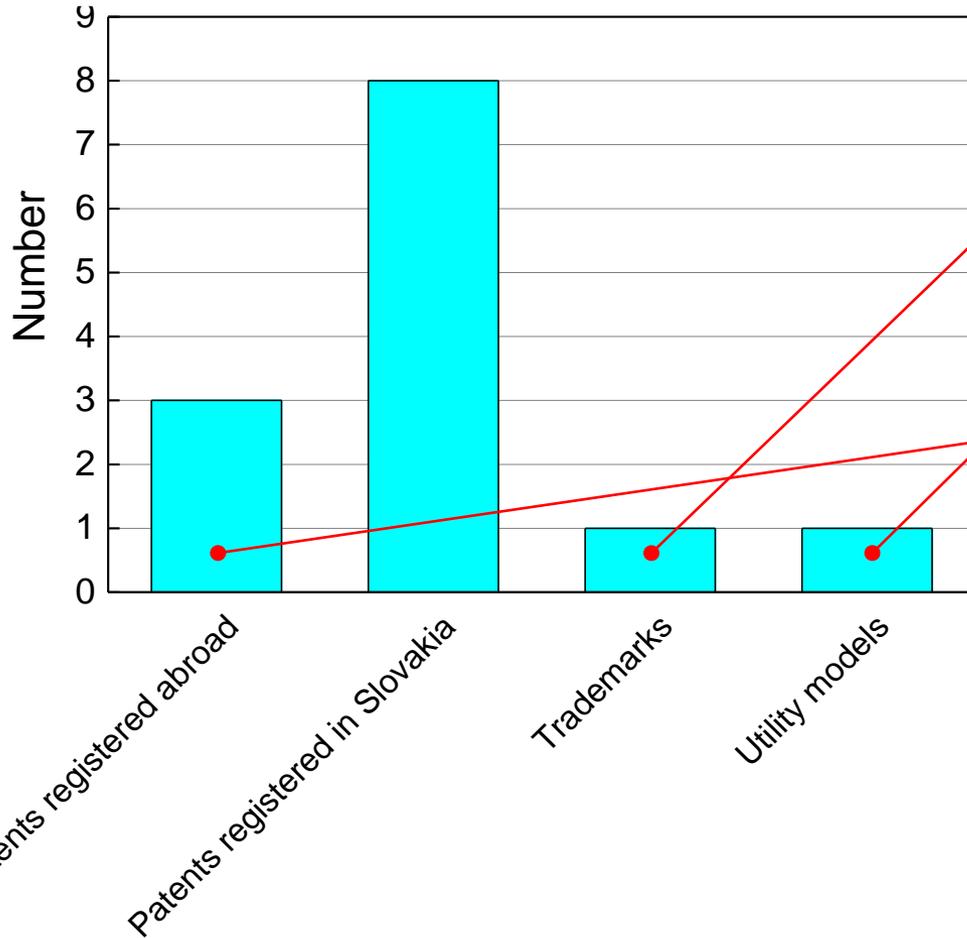
2015



- ~ 1 publication/FTE
- ~ 45 % PI SAS is the corresponding affiliation
- IF > 3 for ~ 50 % of publications in y. 2015

Citations





GRAVIPOL SPECIAL ADHESIVES

- eco**: permanent tackiness suitable for bonding of materials including foils
- electro**: electrically conductive adhesives / sealants & shielding of electromagnetic radiation
- flex**: increased flexibility in the range of low temperatures
- thermo**: bonding a wide variety of materials for long-term stability at elevated temperatures
- uni**: modeling adhesive with universal use
- power**: high-strength joints & all applications with exposure to vibrations

sold and distributed by: **CELOX** 

www.polymer.sav.sk/gravipol

Biologically degradable polymeric composition with high deformability

- with Slovak technical university & Panara s.r.o. (Nitra, SR)
- Protected in Japan, Korea, India, Russia, Singapore, China, USA, Canada, EU

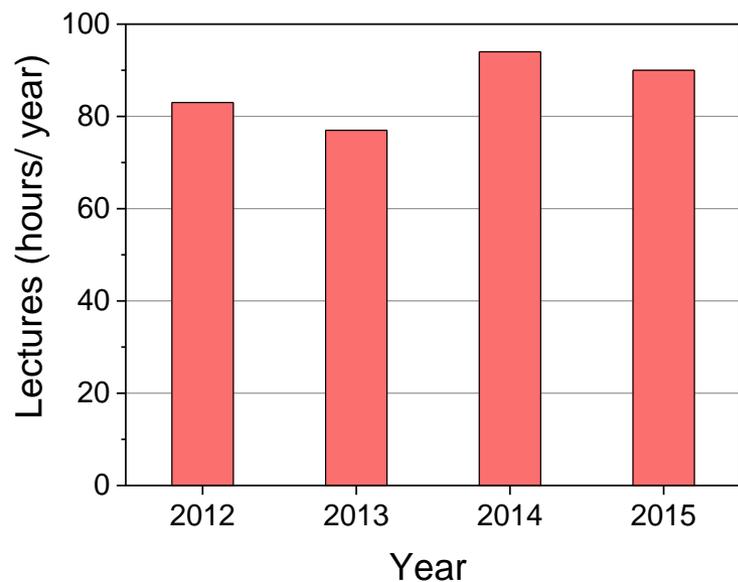


Education & Training

Teaching at Universities // Theses // Committees

Pedagogical activities

1. Faculty of Chemical and Food Technology, Slovak Technical University Bratislava
2. Faculty of Natural Sciences, Comenius University, Bratislava
3. Faculty of Materials Science and Technology, Slovak Technical University Bratislava, Trnava
4. Faculty of Industrial Technologies of Trencin University, Puchov



Supervised bachelor theses (in total)	0	0	1	2
Supervised diploma theses (in total)	1	3	1	4
Supervised PhD theses (in total)	18	20	19	16
Members in PhD committees (in total)	13	12	12	12
Members in DrSc. committees (in total)	6	6	7	2
Members in university/faculty councils (in total)	3	2	2	3
Members in habilitation/inauguration committees (in total)	5	1	3	3

Accredited programs for doctoral studies

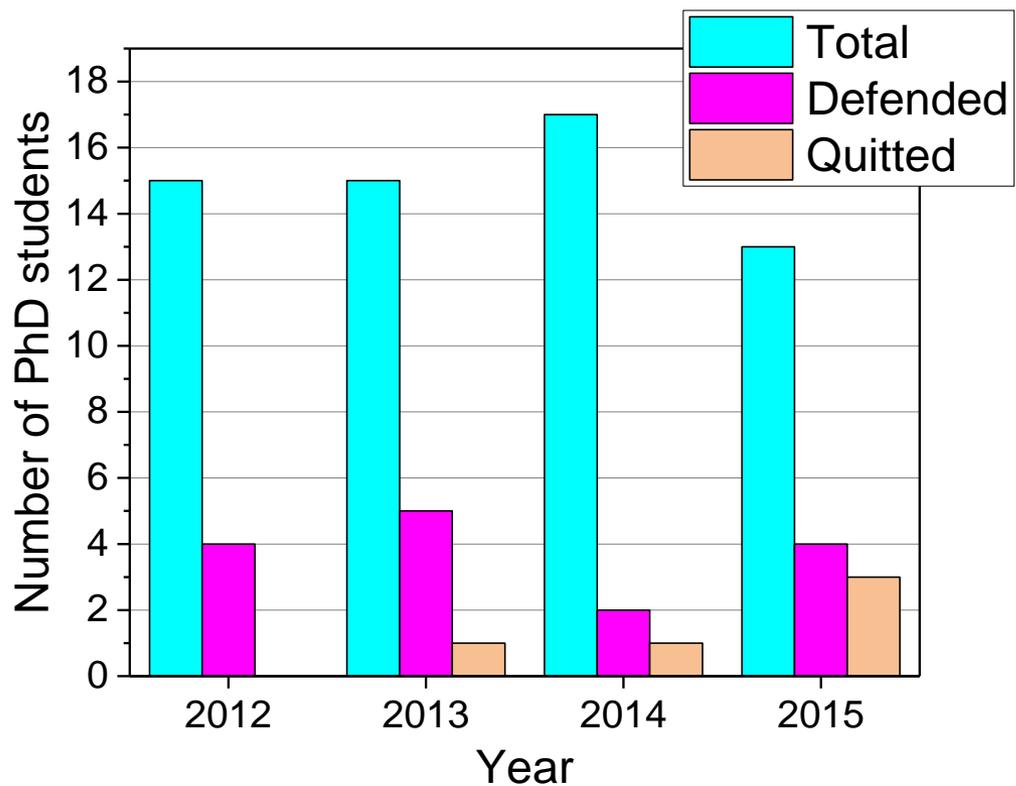
- ❑ 4.1.18 **Physical Chemistry** (Faculty of Chemical and Food Technology Slovak Technical University; validity 2004 – 2014, and Faculty of Natural Sciences Comenius University; validity 2004 - present)

- ❑ 4.1.19 **Macromolecular chemistry** (Faculty of Chemical and Food Technology Slovak Technical University; validity 2004 - present)

- ❑ 5.2.21 **Technology of Polymeric Materials** (Faculty of Chemical and Food Technology Slovak Technical University; validity 2004 – present)

Human Resources

PhD students



Targets:

- Quality
- Training
- Creativity
- Independence
- Satisfaction

Opportunities:

- Participation
 - Projects
 - Conferences
 - Dissemination
- International environment

Evaluation

➤ **PhD students:**

- annual evaluation of the PhD by Scientific board
 - progress
 - recommendations

➤ **Young scientists (since 2012):**

- **contract** between 1 and 5 years by the Institute management
- **criteria:**
 - publications, national/international projects, stay abroad, career plans
 - up to 12 years after the PhD

PhD students and young researchers

Opportunities by Institute management

- **Open positions** are almost constantly available to attract young scientist
 - **dynamics:** contracts + Slovak national scholarship program

PhD students:	2 x Canada, 2x Ukraine
Post-docs:	3 x Czech Rep., 1 x Poland
Profs:	1 x Canada (sabbatical), 1 x Russia

- **Communication** with the Scientific board and Management (**Board of Young Scientists at the Polymer Institute SAS**)
- **Conditions** for the independence and scientific growth
- **Starting grant** < 35 years
- **Competition** for the best paper < 35 years
- **Support** of other activities (English, gym..)



3 successful applicants = a significantly critical mass

Filip Razga, PhD



Zoran Markovic, PhD



Christian Peptu, PhD



Expectations

- Creativity
- Significant impact on scientific environment
- Scientific foot-steps at the Polymer Institute SAS

Evaluation (since 2012)

- **Contract** between 1 and 5 years by the Institute management
- Based on the **questionnaire for the DSc** habilitation
- **Criteria:**
 - Publications,
 - National/international projects
 - National/international recognition
 - Scientific school
 - Other activities for the benefit of institute
- Rules for contracts > **65 years**

Conferences

International visibility: (co)organized conferences

- 4th Bratislava Young Polymer Scientists Workshop BYPoS; October 1-5, 2012; Relax Hotel Avena – Liptovský Ján, Slovak Republic; responsible person: Podhradská Silvia; number of participants: 38
- 5th International Conference Polymeric Materials in Automotive & 21st Slovak Rubber Conference; April 23-25, 2013; Hotel Bonbón - Bratislava, Slovak Republic, responsible person: Chodák Ivan; number of participants: 169
- 10th Anniversary Meeting EUROFILLERS 2013 (Eurofillers 2013); August 25-29, 2013; Hotel Park Inn, Bratislava, Slovak Republic; responsible person: Omastová Mária; number of participants: 170
- 6th European Weathering Symposium EWS; September 11-13, 2013; Hotel Park Inn, Bratislava, Slovak Republic; responsible person: Rychlá Lyda; number of participants: 100
- 5 POLYFRIEND Educational Course and Workshop; September 5, 2013; Polymer Institute of SAS, Bratislava, Slovak Republik; responsible person: Mosnáček Jaroslav; number of participants: 50
- 5th Bratislava Young Polymer Scientists Workshop BYPoS; June 16-20, 2014; Zázrivá, Slovak Republic; responsible person: Šišková Alena; number of participants: 40
- 7 XXII. International Conference on Bioencapsulation; September 17-19, 2014; Hotel Holiday Inn Bratislava, Slovak Republic; responsible person: Lacík Igor; number of participants: 120
- 12th International Seminar on Elastomers ISE'14; August 24-27, 2014; Hotel Park Inn, Bratislava, Slovak Republic; responsible person: Chodák Ivan; number of participants: 110
- 9. International Conference on Bio-Friendly Polymers and Polymer Additives: From Scientific Aspects to Processing and Applications BPPA14; May 19-21, 2014; Research Centre for Natural Sciences of the Hungarian Academy of Sciences in Budapest; responsible person: Mosnáček Jaroslav; number of participants: 110
- 6th International Conference Polymeric Materials in Automotive & 22nd Slovak Rubber Conference; May 26-28, 2015; Hotel Park Inn, Bratislava, Slovak Republic; responsible person: Chodák Ivan; number of participants: 119
- EUPOC 2015 Conducting polymeric materials; May 24 -28, 2015; Palazzo Feltrinelli Lake Garda, Gargnano, Italy; responsible person: Omastová Mária; number of participants: 85



Organizing committee BYPoS 2016

- BYPoS (series)
- Polymers in Automotive (series)
- International (series)
- Bio-friendly polymers

International visibility

- ~ 50 invited lectures at the international conferences
- visiting and visitors

Year	Scientists from PI SAS abroad		Scientist visiting PI SAS	
	number	days	number	days
2012	38	1908	30	286
2013	44	2284	46	878
2014	42	2451	40	915
2015	38	2088	44	883

➤ visits of distinguished scientists

- prof. Terentjev, Cambridge (UK)
- prof. Hadjichristidis, KAUST (Saudi Arabia)
- prof. Tsiang, NCCU (Taiwan)
- prof. Liska, TU Vienna (Austria)
- prof. Meira, CONICET (Argentina)
- prof. Moscatelli, TU Milano (Italy)
- prof. Hutchinson, Queen's Uni (Canada); & **sabbatical**
- prof. Kajiwara, NUE (Japan)
- prof. Shipp, CUP (USA)
- prof. Matyjaszewski, CMU (USA)

➤ international organizations

- European Polymer Federation, EPF (M. Omastova, national representative)
- International Union for Pure and Applied Chemistry, IUPAC (I. Lacik, titular member)

National visibility: (co)organized conferences

1. VII. Slovak-Czech Conference Polymers 2012, November 2012, KC Smolenice, Slovak Republic
2. 65. Congress of Chemical Societies, September 2013, Hotel Hutník, Tatranské Matliare, Slovak Republic (with Slovak Chemical Society)
3. 67. Congress of Chemical Societies, September 2015, Hotel Bellevue, Starý Smokovec, Slovak Republic (with Slovak Chemical Society)

Major involvement of the Polymer Institute SAS



Prof. J.-M. Lehn

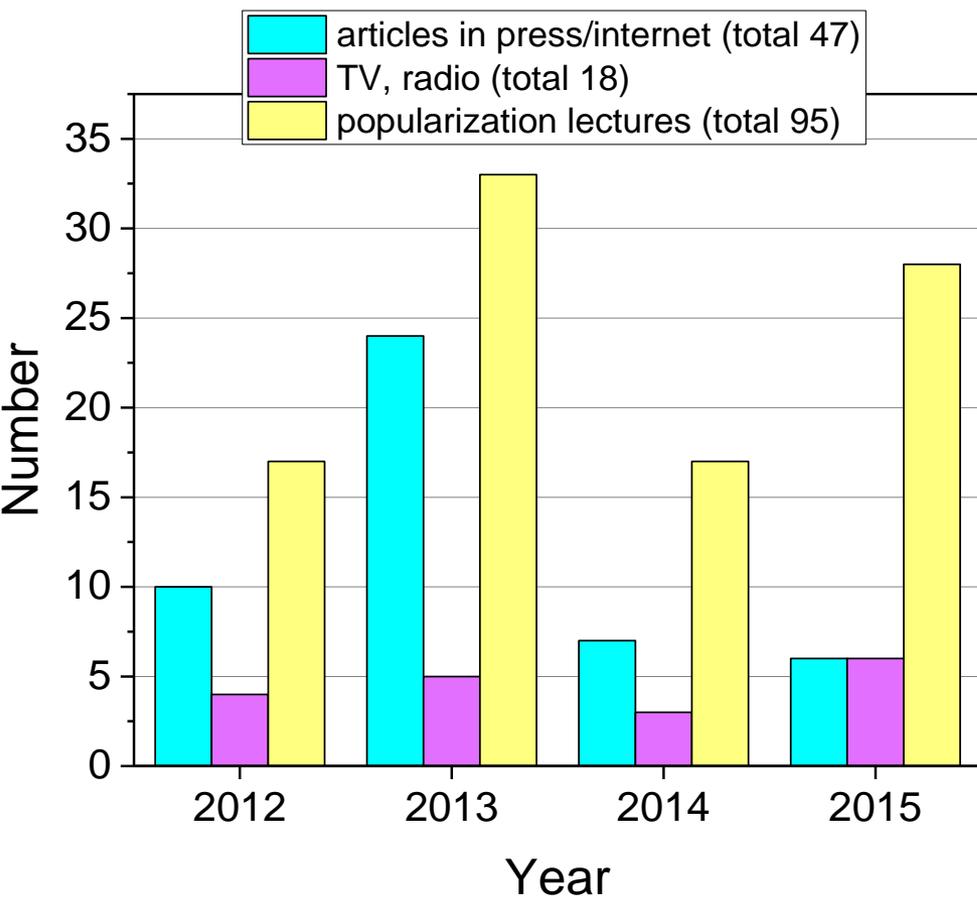
Nobel Prize laureate for chemistry, 1987

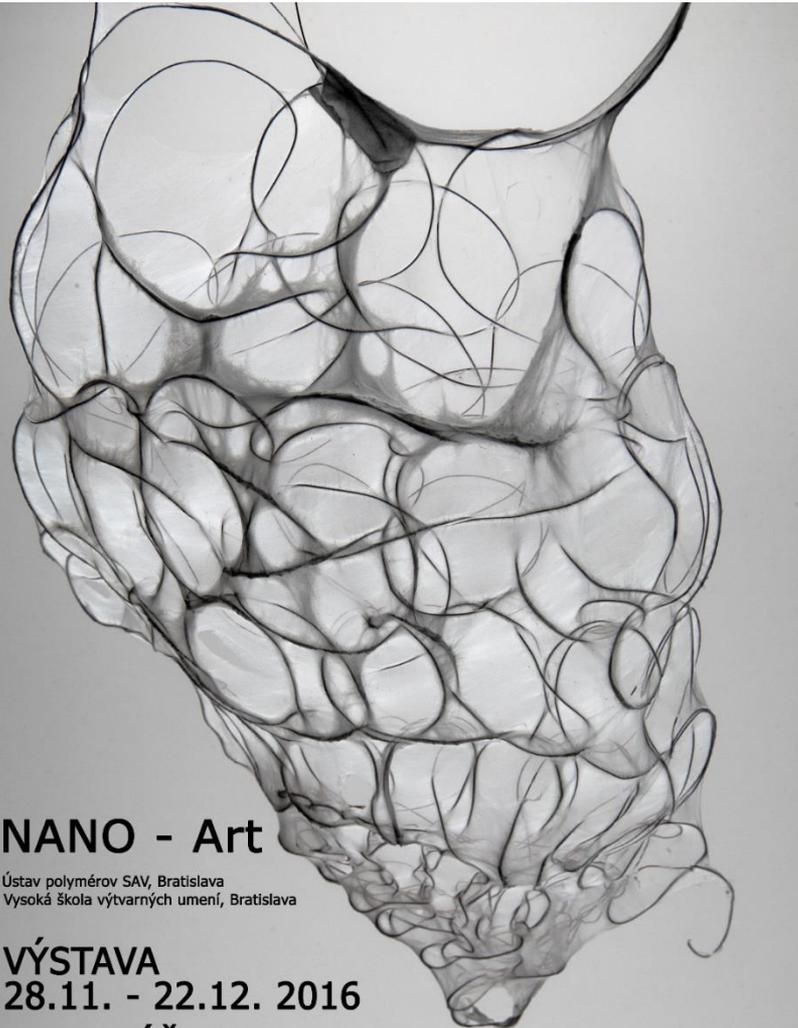


Popularization

Popularization of science

- the inherent part of our life
- numerous forms of popularization





NANO - Art

Ústav polymérov SAV, Bratislava
Vysoká školaýtvarných umení, Bratislava

VÝSTAVA
28.11. - 22.12. 2016

VERNISÁŽ
28.11.2016 o 14,00 hod.

KDE? Ústav polymérov SAV
Dúbravská cesta 9, 845 41
Bratislava - Patrónka

foto: Michal Jakubec, BASEfactory

A. Siskova (Polymer Institute SAS)
&
J. Frajova (Academy of Fine Arts and Design)

Exposition opens on Nov 28

Awards: national and international



Z. Benkova
Young scientist 2012



M. Omastova, I. Lacik, I. Capek;
Top Teams SAS (3 of 21)



I. Chodak, P. Alexy (STU)
Technology Transfer Award
(*Taipei International Invention Show and Technomart 2012*)



I. Chodak & I. Lacik et al
Popularization of science



I. Novak, Z. Spitalsky
Slovmédica Gold Incheba Award



I. Chodak, T. Bleha, J. Rychly
Gold medal SAS



Z. Spitalsky
Top cited paper



I. Lacik
Crystal Wing laureate

Impact on the society

“The Polymer Age” vs “The Label Polymer Institute SAS”

How useful are we to the society?



Importance of
polymer science
to humans

Dissemination of
results to
professionals

Cooperation
academia and industry

External activities
committees,
organizations, legislation

Development of
knowledge in
polymer science

Application of
polymer science

Education of future
generations

SWOT analysis

SWOT analysis

STRENGTHS

- dedicated employees
- external funding
- young generation
- regular evaluation (competitiveness)
- traditional and new expertise
- cooperation and multi-disciplinarity
- national and international visibility
- infrastructure

WEAKNESSES

- poor competitive conditions for employing (young) scientists
- fragmented research (no core projects)
- 42-55 generation gap
- uneven distribution of responsibility
- quality of PhD studies
- no H2020 projects

OPPORTUNITIES

- competitiveness in European and world research area (H2020, SF EU)
- transformation to the public research institution
- hiring experienced post-docs
- hiring PhD students from abroad
- cooperation with universities
- cooperation with industry

THREATS

- perspective for young personnel
- continuity of research
- insufficient number of leaders
- granting system (no grants for young researchers, no grants for capital cost)
- small infrastructure & running cost incl. new infrastructure
- non-availability of Structural funds EU

Previous accreditation (2012)

Organization accredited in **category A** (88.31 %)

Conclusions:

- ❑ The institute **fulfilled all qualitative and quantitative criteria of excellence** in a given research area.
- ❑ It is **internationally well recognized organisation**. It should be emphasized that excellent **fundamental research has also close links to application sphere**.

Recommendation:

1. Development **in the direction of the technological transfer** by helping young researchers or postdoctoral fellows to create new activities in connection with the main research items of the institute (**start-up companies, etc**).
2. **More effort to attract foreign PhD students and postdoctoral fellows** to not only preserve but enhance the reputation it has in the scientific community.

Action:

- ❑ **To point 1.** Technology transfer is an important part of our outputs
 - Strong support //numerous discussions and contacts created
 - Open option as soon as this step is needed
- ❑ **To point 2.** We work on improving
 - Active in the SASPRO program
 - Active in SAIA National scholarship program
 - Open post-doctoral positions

Vision

Mission:

- Expertise
- Education
- Cooperation
- Dissemination



Vision:

- Enhanced recognition in the global polymer science and related fields
- Demonstrated usefulness to professionals and lay public

1. Personnel

- to create the “good to be here” conditions to fulfil the expectations and plans for creative scientific personnel
- to continue in evaluation towards a competitive environment
- to increase the number of core leaders
- to increase the number of project-employed researchers and PhD students
- to implement the “financing vs performance” principle
- to promote personal growth
- to promote mobility

Mission:

- Expertise
- Education
- Cooperation
- Dissemination



Vision:

- Enhanced recognition in the global polymer science and related fields
- Demonstrated usefulness to professionals and lay public

1. Personnel

2. Research topics

- to identify the “core” topics to both reduce fragmented research and enhance the recognition of the institute based on the “core” topics

3. Research environment

- purchase/replace the medium cost equipment
- sophisticated plan for major infrastructure (equipment & laboratory space) from Structural funds EU

4. International recognition

- The key is a high quality personnel producing the research outputs and recognition

To establish the positive loop for all these aspects

...there is a good future for the Polymer Institute SAS

The Open-door day Nov 10 2016, ~ 270 visitors



Evaluation of Polymer Institute SAS by the International evaluation panel (Nov 24 2016)

Agenda

14.30 - 14.35	Opening and introduction of the Evaluation Panel Members (Member of the Accreditation Committee)
14.35 - 14.55	Presentation of the institute and its results (director and/or representatives of selected research teams)
14.55 - 15.15	Discussion to the presentation and to the questionnaire
15.15 - 15.40	Discussion with institute research community
15.40 - 16.00	Discussion with PhD students (closed section)
16.00 - 16.20	Visit of institute infrastructure (laboratory)
16.20 - 16.30	Conclusions (closed section)

