Soft Skills Training for Young Scientists

by

Young Scientists Council of Polymer Institute of SAS

Polymer Institute of SAS

&

Visegrad Fund

2017

EDITORIAL

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FOREWORD

For successful start of a scientific career, young scientists need to gain not only theoretical knowledge, but also they need to master communication and writing skills. Many of the Western European Universities are offering soft skills courses for Ph.D. students. However, the universities in V4 countries are not responding flexibly to these demands and such soft skills courses are often lacking. The consequences are low publishing and insufficient project writing activity of young polymer researchers.

To improve the soft skills of young polymer researchers, we decided to organize the first international soft skills workshop for young polymer scientists from V4 countries. With the financial support from Visegrad fund, the workshop takes place at the Polymer Institute of the Slovak Academy of Sciences, from October 11 to October 16. The workshop is focused on improvement of presentation skills, academic writing and project proposals.

Best Regards,

Slovak Organization Team

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PROGRAMME

October, 11, 2017

12.00 – 12.30	**Opening session** Igor Lacík (director of PI SAS), Anna Zahoranová (chair of workshop)
12.30 – 16.50	Presenting Skills
16.50 – 17.00	Coffee Break
17.00 – 19.00	Presenting Skills Groups A+B (Lecture Hall, PI SAS) Groups C+D (Conference Hall, Pavilion of Materials Sciences)

October, 12, 2017

09.00 – 11.00	Academic Writing
11.00 – 11.10	Coffee Break
11.10 – 13.00	Academic Writing
13.00 – 14.00	Lunch
14.00 – 16.10	Academic Writing
16.10 –	Coffee Break and Discussions

October, 13, 2017

09.00 – 11.00	Academic Writing
11.00 – 11.10	Coffee Break
11.10 – 13.00	Academic Writing
13.00 – 14.00	Lunch
14.00 – 16.10	Academic Writing
16.10 –	BBQ

October, 14, 2017

GROUPS A+B

09.00 – 11.00	Project Writing
11.00 – 11.10	Coffee Break
11.10 – 13.00	Project Writing
13.00 – 14.00	Lunch
14.00 – 16.10	Project Writing

16.10 – Coffee Break and Discussions

GROUPS C+D

09.00 – 11.30 Miniprojects
11.30 – 12.30 Lunch
Transport
13.30 – 16.00 City Tour

19.00 – Social Dinner

October, 15, 2017

GROUPS A+B

09.00 – 11.30 Miniprojects
11.30 – 12.30 Lunch
Transport
13.30 – 16.00 City Tour

GROUPS C+D

09.00 – 11.00 Project Writing
11.00 – 11.10 Coffee Break
11.10 – 13.00 Project Writing
13.00 – 14.00 Lunch
14.00 – 16.10 Project Writing
16.10 – Coffee Break and Discussions

October, 16, 2017

09.00 – 10.00 Presentation of miniprojects – A, B, C, D groups
10.00 – 10.15 K. Muráňová, Office of the Slovak Academy of Sciences
10.15 – 10.45 J. Velecká, SAIA, n. o.
10.45 – 11.10 G. Müller, BASF Slovensko
11.10 – 11.20 Closing ceremony
11.15 – Laboratory Tour

INTRODUCTION TO THE "SOFT SKILLS TRAINING FOR YOUNG SCIENTISTS" PROJECT

The project arose from the collaboration among leading institutions in the field of polymer chemistry in Visegrad region, namely Polymer Institute of the Slovak Academy of Sciences, Budapest University of Technology and Economics, Centre of Polymer and Carbon Materials of the Polish Academy of Sciences, Institute of Macromolecular Chemistry of the Academy of Sciences of the Czech Republic and Tomas Bata University in Zlin. The main aim of the project is to increase competitiveness of the young scientists, from collaborating institutions by increasing their soft skills. For this reason, we organize 5-days workshop focused on three important soft skills - academic writing, project proposal writing and presentation skills. The workshop also comprises a practical part, where the young participants work in small groups on their own project proposals, which they publicly present during the last day of the workshop. The workshop takes place at the Polymer Institute of the Slovak Academy of Sciences in Bratislava, Slovakia.

YOUNG SCIENTISTS COUNCIL

Young Scientists Council (YSC) has been established in 2006. It is an association of young Ph.D. students and young scientists under 35 years working at the Polymer Institute SAS.

The main purpose of YSC is to improve our professional skills in various ways and to share our knowledge among us, for future possibility to cooperate on research projects and enhance the competitiveness of our projects. For this reason, we organize monthly meetings, where we present our experimental results or technical instruments which we are operating. In addition to internal meetings, we organize open seminars with the presentations of invited external young speakers, language courses and popularization activities for students. We also arrange teambuildings and other sport or cultural activities, in order not to see each other only at work.

Members of Young Scientists Council are involved in.....

BYPoS

Bratislava young polymer scientists WORKSHOP

polymer.sav.sk/bypos

BYPoS Workshop is following the tradition of regular meetings of young scientists which was started in 2007.

BYPoS workshop is oriented on **all fields of macromolecular chemistry** and provides the ideal possibility for young polymer scientists (Bc./MSc./PhD. students or ESR) to present and discuss their results and knowledge in the field of polymer chemistry and for networking of young motivated people.

Popularization of Science .... „Find a scientist in yourself“

Pupils do not have to learn only at school. In the spirit of this slogan, the four Institutes of Slovak Academy of Sciences, namely Polymer Institute, Institute of Materials and Machine Mechanics, Institute of Heart Research and Institute of Chemistry has prepared the project under title "Find a scientists in yourself", which was drawn the pupils from primary school into the SAS Institutions. Teaching of chemistry, biology, and physics has shifted to academic ground. Pupils saw the work of scientists directly in action.

The International Visegrad Fund is an international organization based in Bratislava founded by the governments of the Visegrad Group (V4) countries—the Czech Republic, Hungary, the Republic of Poland, and the Slovak Republic—in Štiřín, Czech Republic, on June 9, 2000.

The purpose of the fund is to facilitate and promote the development of closer cooperation among citizens and institutions in the region as well as between the V4 region and other countries, especially in the Western Balkan and Eastern Partnership regions. The fund operates several grant programs, and also awards individual scholarships, fellowships and artist residencies. Grant support is given to original projects namely in the areas of culture, science and research, youth exchanges, cross-border cooperation and tourism promotion, as well as in other priority areas defined in calls.

Visegrad Fund is the main partner of the presented project

PARTNERS OF THE PROJECT: "SOFT SKILLS TRAINING FOR YOUNG SCIENTISTS" SUPPORTED BY VISEGRAD FUND

CMPW PAN CENTRE OF POLYMER AND CARBON MATERIALS
POLISH ACADEMY OF SCIENCES

Univerzita Tomáše Bati ve Zlíně

Polymer Institute of the Slovak Academy of Sciences

Bratislava, Slovakia

Polymer Institute SAS represents an important research and training center for fundamental and applied research in the contemporary topics of polymer chemistry. The Institute activities cover four areas: synthesis and characterization of polymers, composite polymeric materials, polymeric biomaterials and molecular simulation of polymers.

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.

Centre of Polymer and Carbon Materials
Polish Academy of Sciences
Zabrze, Poland

The Centre of Polymer and Carbon Materials (CMPW) is an institute of the Polish Academy of Sciences conducting interdisciplinary scientific research regarding polymers, various carbon forms, obtaining and testing the properties of new polymer and carbon materials. The Centre carries out an interdisciplinary character and covers a wide range of topics related with such areas of science as chemistry, physics, biology and medicine. They include studies on the synthesis of new polymer materials with a controlled structure and on their application: in the construction of nano- and microdevices, in selective transportation processes and the controlled release of biologically active substances, in the construction of materials for optoelectronics and molecular electronics, as well as studies on the technology of applying thin layers and the synthesis of monolithic, porous carbon materials as precursors of catalyst carriers for ecological materials and catalysts themselves, and studies on obtaining polymer materials from renewable resources and biodegradable materials.

Institute of Macromolecular Chemistry of the Academy of Sciences of the Czech Republic

Prague, Czech Republic

The research activities of the Institute of Macromolecular Chemistry of the Academy of Sciences of the Czech Republic span virtually the whole polymer science.

Main trends of research in the IMC

- Biomacromolecular systems
- Dynamics and self-assembling of molecular and supramolecular polymer structures
- Preparation, characterization and use of new polymeric systems with controlled structure and properties

Going from polymer synthesis through physical chemistry of macromolecular systems to polymer physics and materials processing on one hand, or to biochemistry and biology on the other, one can always find within the Institute an expert in a particular field to get an advice or highly qualified collaboration on a project.

Tomas Bata University in Zlín

Zlín, Czech Republic

Tomas Bata University in Zlín (TBU) is a dynamically growing higher education institution comprised of six faculties offering students the possibility of studying humanities, natural sciences, technology and art. It is one of the most prominent centres of research in the Czech Republic and, in many respects, also abroad. With about 9,200 students, TBU ranks among medium-sized Czech universities. TBU follows a longstanding tradition of the Faculty of Technology, which was founded in Zlín in 1969 and since than has educated hundreds of highly-qualified professionals. The University is named after the originator of the shoe industry in Zlín and a world-famous entrepreneur Tomáš Baťa. On January 1, 2011 TBU in Zlin started implementation of the „Centre of polymer systems" project. The aim of the project is to substantially enlarge the existing research infrastructure of TBU in Zlín and create Centre of Polymer Systems (CPS) as a dynamic research unit with long-term sustainability and high added value. CPS as an important regional research centre will support national plastics and rubber industry from the personnel, technology and knowledge viewpoints, and at the same time it will work internationally on all activity levels.

Budapest University of Technology and Economics

Budapest, Hungary

The Department of Plastics and Rubber Technology established by Rudolf Balló at 1953, in order to train professionals to the fields of production, processing and application of polymers. The name of the Department changed to Laboratory of Plastics and Rubber and it merged with the Department of Physical Chemistry, forming the new Department of Physical Chemistry and Material Science in 2008. The head of the Department is Mihály Kállay, while Alfréd Menyhárd-Kállay leads the Laboratory. The Department is in close cooperation with the Institute of Materials and Environmental Chemistry, which belongs to the Research Centre for Natural Sciences of the Hungarian Academy of Sciences.

Activities of the Laboratory expanded and changed during the years both from research and education points of view. Pioneer work has been done in the fields of polymer physics, and polymer blends and composites. Our interest turned to bio-related materials lately, in aspects of biopolymers, biodegradation, natural additives and materials for healthcare products.

ABSTRACTS OF MINIPROJECTS PREPARED BY THE PARTICIPANTS

Practical training of the workshop consists of two part - preparation of short project proposal and oral presentation of the projects. Participants are divided into four groups consisting of different nationalities and different scientific backgrounds. During two days, they are working together on defining of common scientific topic, writing of proposal and preparation of the presentation. The project is presented during the last day of the workshop, evaluated by external evaluators and the best group is awarded. The aim of this activity is to promote international discussion, networking and cooperation, as well as practically use the skills which are taught during the soft skills workshop.

Group A

Cellulose-based battery for green energy source

Eliška Čiková[1], Peter Čakanek[1], Muriel Józó[2], János Molnár[2], Petra Šramková[1]

[1] *Polymer Institute of Slovak Academy of Sciences, Dúbravská cesta 9, 845 41 Bratislava, Slovakia*
[2] *Department of Physical Chemistry and Material Sciences of BUTE, Budapest, Hungary*

This proposal applies for a grant to create a cellulose-based battery for replacing common lithium-ion batteries. We are going to create cellulose-based hydrogel electrolytes and electrodes with the combining the simulation of molecular dynamics and with practical experiments. As a result we will get a battery, which can not only replace everyday source of power, but can be incorporated into the recycling circle. For investigating that properties we would run biodegradability study on the samples.

Group B

High resolution deposition of the conductive polymer paths on the flexible substrate for electronics and regenerative medicine

Paweł Nitschke[1], Johanka Kučerová[2], Flóra Horváth[3], Róbert Várdai[3], Róbert Balogh[4]

[1]*Centre of Polymer and Carbon Materials, Polish Academy of Sciences, Zabrze, Poland*
[2]*Institute of the Macromolecular Chemistry, Prague, Czech Republic*
[3]*Department of Physical Chemistry and Material Sciences of BUTE, Budapest, Hungary*
[4]*Polymer Institute of SAS, Bratislava, Slovakia*

Conductive polymers are essential for a wide range of technologies, e.g. semiconductors, solar panels, regenerative medicine and OLEDs. In this project we develop a new technology of deposition of conductive polymers on flexible foil of polypropylene (PP). We will find a proper supporting PP foil, the most appropriate conductive polymer and the technique for drawing paths on the foil. Moreover, we will investigate the conductivity of the as prepared material. This project will be undertaken to design a new technology for different fields of application from electronics to regenerative medicine.

Group C

Endotoxin modifications for vaccine preparations.

Marta Voršiláková[1], Dominika Olešová[2], Eva Habánková[3], Michaela Sedničková[3], Andras Bartos[4]

[1]Institute of the Macromoecular Chemistry, Praque, Czech Republic
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Endotoxins or lipopolysacharides are large molecules consisting of lipid and polysaccharide composed of O-antigen, outer core and inner core joined by a covalent bond; they are found in the outer membrane of Gram-negative bacteria, and elicit strong immune responses in animals. Aplication of lipopolysacharides directly to human body would cause an enourmous inflammatory reaction, therefore modification of their structure is essential for production of effective vaccine. We propose the PEGylation as a possible option for modifiction of molecule, as it is known that PEGylation of molecules increases their biocompatibility and could decrease the toxic acitivity of lipopolysacharides. PEGylation is the process of both covalent and non-covalent attachment or amalgamation of polyethylene glycol. The final product will be of high purity and could bring new possibilities in prevention against life threatening infections like meningitis and enterocolitis.

Group D

Preparation and characterization of surface-coated nanoparticles for biomedical applications.

Helena Švajdlenková[1], Levente Kárpáti[2], Michal Bláha[3], Marina Tavares[3]

[1]*Polymer Institute of SAS, Bratislava, Slovakia*
[2]*Department of Physical Chemistry and Material Sciences of BUTE, Budapest, Hungary*
[3]*Institute of Macromolecular Chemistry ASCR, Prague, Czech Republic*

The aim of this project is to prepare and investigate properties of surface coated nanoparticles for biomedical applications. Coated poly(lactic acid) (PLA) nanoparticles will be obtained by solvent-displacement method using poly(lactic acid) prepared by direct polycondensation method and commercially available Pluronics. Obtained coated nanoparticles will be characterized by means of attenuated total reflection FTIR spectroscopy, Raman spectroscopy, positron annihilation spectroscopy, and dielectric spectroscopy. We want to understand the relation between the interaction of PLA and various Pluronics, structural-dynamic properties of formed core-shell nanoparticles and, potentially, influence of structural-dynamic properties on the drug release rate.

LIST OF PARTICIPANTS BY GROUP MEMBERSHIP AND IN ALPHABETICAL ORDER

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ZAHORANOVÁ	Anna	anna.zahoranova@savba.sk

LIST OF EXPERTS

Experts for Presenting Skills

Zuzana FIALOVÁ

Dušan ONDRUŠEK

Partners for Democratic Change Slovakia (PDCS, o.z.)

Ms. Fialová and Mr. Ondrušek are trainers and consultants for PDCS o.z.

PDCS is a non-governmental organization providing professional training and facilitation services, consultancy and advisory services in areas of conflict resolution, support of dialogue in the society, citizen participation and civil society development in Slovakia and abroad. PDSC is also organizing courses focused on effective communication, presentation skills, critical thinking and others.

Expert for Academic Writing

Senj E. TEMPLE

Diplomatic Academy of Vienna

Ms. Temple has been teaching Academic Writing Skills not only at the Doctoral Centre of the University of Vienna but also at the Diplomatic Academy, and at the University of Applied Sciences in Vienna, Burgenland and Krems. She also gives writing workshops at the UN. She is particularly interested in designing practical workshops to meet the needs of graduate students and professionals.

Expert for project writing and management

Ivana KÝPEŤOVÁ

Matej Bel University, Banská Bystrica, Slovakia

Throughout the years, Ms. Kýpeťová has developed extensive experience in preparation and successful implementation of various projects, including Horizon 2020. She is also teaching a course Writing proposals and management of the projects at Matej Bel University.

STUDY MATERIALS

9 tips for good sentence:

- Short sentences
- Focus on the first 7 or 8 words of a sentence.
- Avoid long introductory phrases.
- Make subjects short and concrete (in first 7 or 8 words of sentence).
- Avoid interrupting subject and verb with more than a word or two.
- Put key actions in verbs, not in nouns.
- Put information familiar to readers at the beginning of a sentence, new information at the end.
- Choose active or passive verbs to reflect the previous principles.
- Use parallel structure

According to linguists (Swales 2009) abstracts should contain the following information:

Move #	**Typical Labels**	**Implied question**
Move 1	Background/introduction /situation	What do we know about the topic? Why is the topic important?
Move 2	Present research/purpose	What is the study about?
Move 3	Methods/materials/ subjects/procedures	How was it done?
Move 4	Results/findings	What was discovered
Move 5	Discussion/conclusion/implications/ recommendations	What do the findings mean?

Project

A project is a one-time activity that produces a specific output or outcome with pre-defined resources:

- solves a particular problem (preferably one);
- is aimed to achieve concrete and measurable goals;
- has the exact start and end dates;
- has pre-defined phases or stages;
- has a clear definition of activities and responsibilities;
- has asigned human, financial and material resources;
- has specific outputs;
- brings something new, unique to a particular target group**.**

In the proposal:

- Focus on the reader.
- Keep logic in the texts.
- Be specific, precise, use facts, numbers, graphs, pictures.
- Omit unnecessary details and formalities.
- Never cheat or make it up.
- Highlight the main ideas, use clear tables, charts, bullets, colors.
- Too long sentences are an obstacle to better understanding of your text.
- Use phrases, definitions, names from the call, or program manual.
- Do external proof reading.

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At BASF, we are building a chemistry for a sustainable future. We combine economic success, social responsibility and environmental protection. Through science and innovation, we enable our customers to respond in almost every industry to the present and future needs of the company.

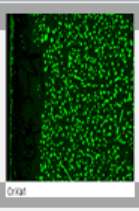
Chromservis Company Ltd. is a fast and reliable partner in solving analytical problems in laboratories and in industrial applications. Comes chromatographic instruments and accessories for analytical and semi-preparative applications for purification processes, chemicals, reference materials, instruments and sensors for measuring physical quantities, systems and accessories for sample pretreatment.

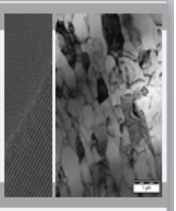
dm drogerie markt belongs to the largest companies in Central and Eastern Europe dealing with the sale of drug goods. The first store in Slovakia was opened in 1995 in Bratislava. At present, it has 139 stores in Slovakia. Market offers a wide range of beauty, wellness, childcare, household, photographic services, seasonal products and animal.

Within the activities of non-investment fund Cukrovka n. f. we contribute to the promotion of promising therapeutic solutions for patients with Type I diabetes, which is based on transplantation of functional pancreatic islets encapsulated in the microcapsules with a semipermeable membrane. In case of successful completion of the preclinical phase, Cukrovka n. f. will fully support the establishment of this promising therapeutic solution to clinical practice.

Ústav materiálov a mechaniky strojov, Slovenskej akadémie vied

Institute of materials and machine mechanics, Slovak academy of sciences





Workshop on Characterization Methods of Microstructure using SEM microscopy

ORGANIZED BY: Institute of materials and machine mechanics of Slovak academy of sciences

Which will be held on **May 15, 2017, Bratislava, Slovakia**

The aim of the action is to present the characterization methods used to monitor and characterize material microstructures, using scanning electron microscopy and chemical analysis. Based on the correctly selected characterization method, it is possible to quickly and efficiently detect the origin of the disorder, or to understand the relationship between the production, structure and properties of the materials. The result will be, for example, a reduction in operating costs, maintenance costs in case of removal of the origin of an operating disorder or in improving the properties of materials by understanding the link "production - microstructure - properties", which will increase the competitiveness of the business entity.

TARGET GROUP: those interested from industry and universities interested in learning about metal and metal composites. People who are interested in getting information about the possibility of cooperation, respectively, graduates of the Universities.

CONTACT PERSON: **Martin Nosko,**
martin.nosko@savba.sk

VENUE: **Institute of materials and machine mechanics of SAS,**
Dúbravská cesta 9/6319, Bratislava, SK


ÚSTAV POLYMÉROV SAV
POLYMER INSTITUTE SAS


Miniprojects
• project proposal
• presentation


Senj

NOTES

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