



Boosting EU-Ukraine cooperation in the field of Superhard Materials

NEWSLETTER No5

CONTENT

On the job-training in France	2
Info-day in Warsaw, Poland.....	3
On the-job-training in Poland.....	6
Announcement of planned event in June 2014.....	8



Boosting EU-Ukraine cooperation in the field of Superhard Materials

On the job-training in France

Title	On-the-job training in France
Date	14 May - 14 June, 2013
Venue	Institut P' UPR 3346 CNRS, Universite de Poitiers, ENSMA, SP2MI, Teleport 2, BP30179, 86962 Futuroscope, France
Organizer	V.N.Bakul Institute for Superhard Materials (ISM) of the National Academy of Science
Participants	From ISM Dr. Tetyana Basyuk and Laboratoire PHYMAT/CNRS from France
Number of participants	1

The second round of the On-the-job FP7 training of project START in the Institute P' has been carried out May 14 – June 14. During the training Dr. T. V. Basyuk from Institute for Superhard materials was integrated into the research team of French partner for one month from for preparation proposals under FP7 and carrying out research within the context of this project. The general object of research T. Basyuk was in area superhard materials based on polycrystalline diamond- and cBN. This research topic can be perspective for next call of new program "Horizon 2020".

The on-the-job FP7 training process was divided on two parts: the scientific part devoted to research investigation and another part connected with the project proposal preparation. The aim and importance of collaboration and benefits was discussed. The great attention was paid to the discussions concerning amount the qualification of the European partners, availability of necessary research facilities for the Projects successful implementation and research team's interaction for attaining outstanding scientific results.

Within the context of this project some research investigation have been performed in the Laboratoire PHYMAT with the modern equipment for synthesis, materials structure and properties study and high skilled scientific personal. In their research Dr T.V. Basyuk worked on different equipments, such us: Hot Isostatic Pressure techniques (HIP), Scanning electron microscope (SEM) and X-ray Bruker D8 advance diffractometer for determination of manufacturing process, crystal structure and properties of MAX materials.



Encapsulation MAX phases samples



Electron microscope

Info-day in Warsaw, Poland

Title	Info-day in Warsaw, Poland on 23 September 2013
Date	23 September 2013
Venue	29/37 Sokołowska str., UNIPRESS, Warszawa
Organizer	V.N. Bakul Institute for Superhard Materials (ISM) of the National Academy of Sciences
Participants	V.N. Bakul Institute for Superhard Materials (ISM) of the National Academy of Sciences, teams from UNIPRESS.
Number of participants	37

The Info day on the 23 September was organized by FP7 project START, "Boosting EU-Ukraine cooperation in the field of Superhard Materials", the project coordinator – ISM, project partner – UNIPRESS. Activity of NCP Poland is supported from EU FP7 project "NMP TeAm2". The most important aim info day was acquaintance with scientific institutes and laboratories for future scientific cooperation.

The information day started with the welcome speech of Bogdan PALOSH, co-director of UNIPRESS. Volodymyr TURKEYVYCH, deputy director of ISM, and Mr. PALOSH, introduced their colleges. All participants also introduced themselves.



Izabella GRZEGORY, director of UNIPRESS, presented the information about Institute of High Pressure Physics.

The research Institute of High Pressure Physics worked in the field of high pressure physics and materials science. More than 200 laboratories in the world uses high-pressure equipment from UNIPRESS.

Boosting EU-Ukraine cooperation in the field of Superhard Materials



Volodymyr TURKEVICH with information about activities of the project START "Boosting EU-Ukraine cooperation in the field of superhard materials"

V. TURKEVICH has presented the listed project proposals that were prepared within START and proposals that are going to be prepared. The project proposals were prepared in area:

- structure and properties of MAX phases solid solutions
- nanostructural superconductors
- Polycrystalline cBN-based superhard materials
- composites for tooling applications
- novel microstructures in cubic and wurtzite boron nitride

Also were presented the planned proposals.

Ivan Kulchytskyy, President of the NGO "Agency Europeans innovations" was presented topics about:

- Ukraine in FP7 and possibility for Ukraine in HORIZON2020;
- Nanotechnology in Ukraine;
- FP7 projects in NMP with partners from Ukraine;
- Development cooperation EU-Ukraine in NMP.

In the next session of the information day scientists from ISM presented their researches. Prof. Dr. Volodymyr KUSHCH, ISM of the NAS, presented "Computer simulation of production technologies and mechanical behaviour of composite materials" and Dr. Aleksandr OSIPOV, ISM of the NAS, presented "HPHT-sintering of advanced diamond-containing composites".

Eugeniusz Jędrzyk, senior R&D engineer of GIG, presented "Methano/DME manufacturing using biogas or syngas produced on Natural Gas low production well".

All researches caused great interest in participants of infoday and were discussed on open discussion session at the end of infoday.

Boosting EU-Ukraine cooperation in the field of Superhard Materials



Jaroslaw PIEKARSKI with presentation "Nanotechnologies, advanced materials and new production technologies in HORIZON 2020" (NMPTeAm2 project). Jaroslaw said about the optimization the interactive partner search system and websites, through brokerage events, joint stands and joint awareness campaigns, standardize the Network skills, forge stronger links with all NMP related platforms, networks and initiatives in Europe

Mariusz STACHNIK, President of Mazovia Cluster ICT, introduced Mazovia Cluster ICT. The cluster consists of 6 research institutes, 1 local authority, 61 SMEs and 3 financial institutions.

The open discussion session about project proposals to the program HORIZON 2020 was the closure part of the Infoday.

Generally, Infoday caused great interest. The participants represented leading universities and research institutes from various Polish cities.

On the-job-training in Poland

Title	On-the-job training in Poland
Date	15 - 27 September 2013 15 - 28 September 2013
Venue	Institute of High Pressure Physics of the Polish Academy of Sciences (UNIPRESS)
Organizer	V.N. Baku Institute for Superhard Materials (ISM) of the National Academy of Sciences
Participants	Dr. Lyudmila Kisterska Tetiana Garbuz
Scientific responsible:	Prof. Sylwester Rzoska

During 15-28 September in Poland the job training in Poland was organized. Participants from Ukraine, ISM (T. Garbuz and L. Kisterska) and from the Institute of High Pressure Physics of the Polish Academy of Sciences (UNIPRESS, Poland) worked in area of superhard materials.

The aim of those on-the-job FP7 trainings was to give the possibility for ISM' researchers to acquaint with the modern methodology and equipment in the materials science area and to discuss the possibility to perform common research work in the frame of mutual scientific project.

L. Kisterska worked in the area of creating new "active" packaging materials modified by bactericidal nanoparticles and developing of new HPP processes (scientific team consist with research from RKFKI Atomic Engineering Institute). During training discussed the development of novel processing methods for food preservation to improve safety, quality and shelf life of packaged foods selected the suitable packaging materials.



Dr. Lyudmila Kisterska in UNIPRESS

Boosting EU-Ukraine cooperation in the field of Superhard Materials

The participants of training expect to obtain model-food product with very top functional features for consumers, tightly packed and able to maintain the microbiological safeness well above 90 days maybe even approaching 1 year, without freezing.



Dr. T. Garbuz in UNIPRESS

T. Garbuz worked with UNIPRESS team, which consist from the: Warsaw University of technology, Faculty of Materials Science and Engineering; Institute of Heat Engineering, Faculty of Power and Aeronautical Engineering. The research team was interested in area of the processes of high pressure sintering and high-pressure growth of crystals. The job training is devoted to work in project “Regularities of formation of structure and properties of superhard composites by reaction sintering of cubic boron nitride with aluminum and superhard phase at high pressure for cutting tool”, finding the new research methods of PCBN materials and cooperation in this field.

In frame of job training the possibility of cooperation with the Warsaw University of technology, namely the Faculty of Materials Science and Engineering for the use of methods of SEM, TEM, STEM, atomic force microscopy, X-ray diffraction for materials research based on cubic boron nitride, and also Faculty of Power and Aeronautical Engineering of Institute of Heat Engineering for measuring thermal properties of this materials was discussed.

Dr. T. Garbuz with research team: study starting powder, production of polycrystalline composite materials, study of the structure and phase compound in new sintering PCBN composites, measurement of the physical and mechanical properties of new sintering PCBN composites, testing and evaluation of new PCBN materials properties under machining conditions.



Boosting EU-Ukraine cooperation in the field of Superhard Materials

Announcement of planned event in June 2014

Conference: «Advanced Materials and Machining Processes: Development of the Cooperation between European Union and Ukraine»

Date: 26-27 June 2014.

A major 2-days Dissemination Conference during 26-27 June 2014 in Ukraine to facilitate the dissemination of scientific information, the exchange of ideas in the field of Superhard Materials, as well as the potential applications and societal impact.

The detailed information about the conference will be published on the project web-site: <http://www.start.ism.kiev.ua>.