

## Internship of young scientists of the ISM at the Institute of High Pressure Physics (UNIPRESS)

### Objects of cooperation



V. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine was established in 1961 and carries out researches of conditions for artificial diamonds getting as well as the possibility of their mass production and usage. At present the Institute became one of the leading scientific-technical materials science centers of the Europe. The Institute is engaged in the development of processes for production and application of superhard materials, high-density high-tech ceramics, cemented carbides, superconducting ceramics, structural products and tools of the above materials (<http://www.ism.kiev.ua>)



Institute of High Pressure Physics (UNIPRESS) refers to the Polish Academy of Sciences was established in 1972 as flagship within semiconductor characteristics changing under pressure researching. The main aim of the Institute is a usage of high pressures methods for fundamental researches as well as for technologies

development within the beneath listed areas:

- Solid-state physics;
- Optoelectronics;
- Nano-technologies;
- Biomaterials and foodstuffs conservation;
- Metal formation under pressure. (<http://w3.unipress.waw.pl>)

### The scope of cooperation

Two-weeks internship of the group of young scientists from Ukraine was conducted in Poland (UNIPRESS) within the START. The aim of this activity was to strengthen and broaden the area of cooperation between two scientific organizations, to attract young people to jobs within international projects, to demonstrate scientific and technical opportunities of UNIPRESS institute.



### The obtained results

- Ukrainian scientists received an opportunity to be on probation at the European laboratory using modern equipment under the guidance of experienced experts.
- Joint researches and creation of new materials broadens possibility of publication in European specialized scientific publications and scientific conferences participation.
- Joint European patents receiving on special terms (as for scientific organizations) that will provide with the possibility of further participation in international projects without a risk to lost Institute's developments.
- Personal contacts with persons who perform at present European research projects were established. This provided with a possibility to know peculiarities of their projects submission and performance specificity. Furthermore, it will help during project proposals preparation for HORIZON 2020.
- Researches of diamond substitute microtexture were conducted in order to determine possibilities of equipment usage in the future. It was proposed to use UNIPRESS's equipment for future project activities performance, including research on characteristics of materials that are being developed as well as their phase composition.

### Process of achieving results

An excursion about UNIPRESS departments was conducted and presentation with information about topics that are working on in the Institute was presented. It was possible to choose a research trend that is the most interesting for a group of scientists from Ukraine. Ukrainian researchers saw equipment that is engaged in researches, knew what priorities are of a great importance at present for Polish colleagues, being imbedded to research-and-development groups, oversaw the working principles of Polish colleagues in laboratories. Travel was done via a support of START project.

### Plans for future

Strengthening of good partner relations between V. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine and UNIPRESS that were established during the first stage of START project performance is expected within further cooperation. The partnership with such honorable institute of Polish Academy of Sciences will assist in new contacts with European community establishment. In turn, participation of ISM employees that are specializing on high pressure equipment will ease the development of new high pressure meshes constructions, using new materials that allow conducting researches of bigger extend examples within higher pressure and temperature taking into account the peculiarities of researched materials (reactivity, volatility, liquidity...)

Having an opportunity to adopt the best practices of a scientific institution that successfully commercialized its product on the European market, ISM receives in such a way a working example of Scientific Organization re-organization to the intent that to shift partly to independent funding.

Joint activity of institutes provides with a possibility of experience and postgraduates internships exchanges that will improve postgraduates' assignments level.