

## Research Internship at the Laboratory of Materials Physics (PHYMAT), France

### Objects of cooperation



V. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine is engaged in the development of processes for production and application of synthetic diamond, cubic boron nitride and other superhard materials, high-density high-tech ceramics, cemented carbides, superconducting ceramics, structural products and tools of the above materials (<http://www.ism.kiev.ua>).



The Laboratory of Materials Physics (PHYMAT) is a part of the Physics and Mechanics faculty of University P' (Poitiers, France) and is included to the CNRS structure. The Laboratory has many years' experience in cooperation with Institute for Superhard Materials in the area of synthesis, research of structure and characteristics of nano laminated materials (ternary carbide, nitrides and borides) for new perspective application.

### The scope of cooperation

The aim of the visit was an integration of two young scientific workers from V. Bakul Institute for Superhard Materials into the research group of PHYMAT laboratory for conduction of joint scientific experiments for determination of crystal structure and mechanic properties of nanolaminated MAX materials.



### The obtained results

The influence of high pressure on MAX materials structure and their mechanical properties was determined as a result. The conducted experimental researches became a base for Ukrainian-French project preparation within the Program of joint activities between Ukraine and France in the area of scientific-technical cooperation «Dnepr» for 2013-2014.

### Process of achieving results

Two young researchers were selected among sizeable staff of research scientists of Institute for Superhard Materials in order to achieve the formulated tasks. The area of their interests is close to research trends of PHYMAT laboratory. The trip was conducted with the support of "START" project 7 Framework Programme. Internship duration – 15 days.

### Plans for future

Creation of the base for development of long-term partner relations between V. Bakul Institute for Superhard Materials of the National Academy of Sciences of Ukraine and laboratory of PHYMAT/CNRS (France). Promotion of the Institute for Superhard Materials, as well as its scientific-research achievements at the European level, development of cooperation and communication channels with scientific centers of European Union.