



Who we are

Department of Technological Control of Surface Quality

We have a great experience in theoretical and practical activity in the field of applications of cBN, PCD and ceramic **cutting tools**. Our mission is to develop ways and approaches that lead to new technologies based on a deep understanding of **machining process**. The results of our research are the base for development of new types of more efficient superhard tools adapted to specific cutting conditions.

Collaboration interests

Department of Technological Quality Control of the ISM NANU is interested in cooperation in international projects under FP8 and other programs in mentioned fields of researches and close areas.

Potential role: research partner, scientific expert, research executor, etc

Research Areas

- Fractal estimation of tool wear regularities and structure.
- Researches of contact interaction and wear mechanisms of cBN tools and development of cBN tools for high-speed machining of Ni-based alloys
- Improvement of the efficiency of hard turning:
 - development of high effective oblique cutting cBN tools (single-edged and tools with cylindrical rake face);
 - researches of regularities of high-feed hard turning.
- Research of regularities of machining and wear mechanisms of cBN tools with coatings and development of protective coatings for superhard cutting tools.
- Directed development of tool composites adapted for specific technological conditions.

Main achievements

The conception of increasing machining efficiency was developed (improvement of productivity and quality of machined surfaces). In framework of that conception there were created several innovative products, among them:

Cutting tool with three-layer coating (Pat. of Ukraine № 89923)

Cutting tool with two-layer nanocrystalline coating (Pat. of Ukraine № 96908)

Reference projects

Department takes part in cooperation under Ukrainian State Fund for Fundamental Research programs:

- Studying of processes of creating and service characteristics of the sprayed surfaces from materials of amorphous-crystal structure and technological managing during their mechanical treatment (in cooperation with Belarusian State Agrarian Technical University)

- Syntheses of high toughness composite materials for tool on the base of the oxide nanostructural ceramics (in cooperation with A. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences)

Contact information

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What makes us a good partner

- Highly qualified specialists
- Understanding state-of-the-art in metal cutting using superhard and ceramic tools
- Ability to find unique solutions and new ideas
- Partnership with leading research centers all over former USSR
- Great experience in cooperation with machine-building and metallurgy enterprises