Advanced Metal Materials Laboratory

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We have developed unique methods of mathematical modeling of phase interaction at high temperatures. These methods allow us to build models taking into account various physical, chemical and technological parameters. The models can be implemented in optimization of various technological processes.

Development of environment-friendly coating technologies as an alternative for chrome plating

One of the last developments of the laboratory is an environmentally friendly coating technology as an alternative to the electrolytic hard chrome plating. This project includes advanced technologies in the following fields: nano-materials (obtaining clad nano-size powders), special coatings (spraying lightweight metals) and electrochemistry (micro-arc oxidation).

The applications of the technologies include apparently all the range of machinery. At the first stage the developments will be applied in avionics (landing gear mechanisms of aircrafts).

The Laboratory is also involved in:

- Synthesis and analysis of nano-crystal materials on the base of manganese oxides using the technique of intensive plastic;
- Mechano-chemical synthesis of nano-composites with biologically active substances;
- Classification of carbide nano-powders by diffraction techniques on the homogeneity degree, particle sizes and micro-stress (micro-deformations);
- Development of selective coatings for power devices on the base of nano-sized ceramic powders;
- Other related projects.