

## 6.13. MAGNETIC FLUIDS IN ENGINEERING AND BIOMEDICINE

Magnetic fluids are intended for use in:

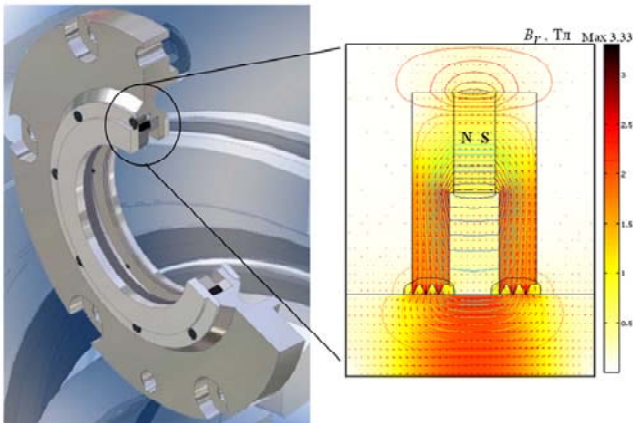
- **engineering:** for sealing the rotating shaft in the magnetic-fluid sealers, as a lubricant in friction units, in shock absorbers, high-efficiency dampers, magnetic separators, cooling systems with increased circulation speed of the cooling magnetic fluid;
- **ecology:** for collecting oil products from the water surface;
- **medicine:** at the targeted delivery of medicines using magnetic carriers, X-ray radioscopy, blood flow control by creating magnetic blood clots, magnetic-fluid hyperthermia for the use in oncology.

**Proposed:**

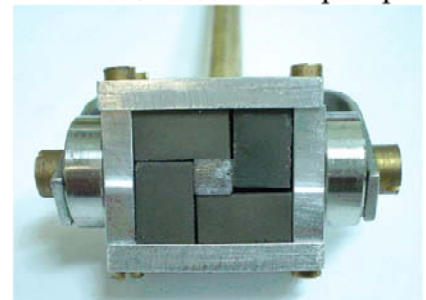
- computer simulation, research and optimization of electrical, magnetic and hydrodynamic processes in active zones of technological units of industrial apparatus containing magnetic fluids;
- the development of optimal design solutions and the manufacture of magnetic-fluid sealers, magnetic systems with permanent magnets for controlling the movement of a magnetic fluid at a given distance and for separation of magnetic nanoparticles;
- measurement using the developed method (according to the patent of Ukraine № 102749) of magnetic properties and sedimentation stability of a magnetic fluid in an external non-uniform magnetic field;
- development of induction systems and high-frequency power supplies for the implementation of magnetic-fluid hyperthermia;
- production of magnetic fluids on various bases (carbohydrate, organosilicon, glycerol, kerosene, diethylene glycol, physical solution, etc.) with the necessary properties and improved performance characteristics.

**Our developments:**

Моделювання магнітного поля та гідродинамічних процесів в активній зоні магніто-рідинного герметизатора



Магнітна система для адресної доставки та локалізації медичних препаратів



Експериментальна установка для магніто-рідинної гіпертермії

