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TITLE: NANOMAGNETISM AT NATIONAL INSTITUTE OF MATERIALS PHYSICS

Affiliation: Magnetism and
Superconductivity Department

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Competences and resources:

1. *Magnetic nanostructures for permanent magnets:* Exchange-spring magnets (nano-composites and multilayers). Nanostructures with shape anisotropy. Molecular magnets, spin frustrated systems.
2. *Magneto-functional nanostructures:* Magneto-conductive nanostructures (spin valves, exchange bias bilayers, surface and interface spin configurations in thin films and multilayers. Multi-functional nanostructures (heterogenous structures interfacing at least one magneto-functional material)
3. *Nanoparticles dispersed in various media:* Magnetic nanoentities dispersed in metallic/semiconducting/polimeric matrices. Pinning centers in superconductors. Functionalized nanoparticles. Magnetic nanofluids.



Processing via:

- arc and induction,
- melt spinning,
- r.f. sputtering,
- mechanical attrition
- spark plasma sintering
- microwave sintering
- hot press sintering

Characterization via:

- SQUID and PPMS magnetometry,
- Nuclear gamma resonance
- DSC and flash calorimetry
- Gas reaction controller with gas absorption/desorption

