MATERIALS SCIENCE FOR HIGH-PERFORMANCE PERMANENT MAGNETS

High-performance permanent magnets are indispensable in realizing energy-efficient electric-mechanical energy conversion devices such as motors and generators. Since the hard magnetism appears with complex multi-phase microstructure, academic activities in this frontier will proceed with strong corporations between computational and characterization studies. This symposium solicits experimental, theoretical, and computational investigations from academia, national laboratories, and industry on next generation hard magnetic materials including improvement of neodymium iron borides permanent magnets, other rare earth compounds, the industrial viability of nanocomposite magnets, and the potential of rare earth free permanent magnets.

Topics include:

- New hard magnetic materials
- Dy-free Nd-Fe-B permanent magnets
- Light rare earth-based new hard magnetic compounds
- Microstructural characterization and magnetic analysis of novel hard magnetic materials
- First-principles materials search for new permanent magnets
- Numerical simulation of hard magnetic properties
- Coercivity theory and magnetization reversal processes
- Thermodynamics assessment of permanent magnet materials

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