



Metallic Superconductors - The Workhorses of Superconductivity

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Message from the Guest Editor

Dear Colleagues,

Superconductivity was first discovered in metal superconductors, and the first real applications brought up by intermetallic alloys still play an important role until now (NbTi, Nb₃Sn). The development of MgB₂ which reaches the highest superconducting transition temperature of approx. 38 K enables new research possibilities for applications at ~20 K provided by cryo-cooling systems. The ever present quest for higher critical currents requires intense research concerning the flux pinning sites created artificially by irradiation and newly developed processing techniques.

Another interesting aspect of metallic superconductors is that they still provide new insights to superconductivity, both theoretically and experimentally. Among such observations is the paramagnetic Meissner effect (PME) observed firstly in Nb disks, and since then also in other metallic systems. Further, two-dimensional systems based on metallic materials like NbSe₂, Bi₂Te₃, etc. offer a simple experimental access to these systems. Therefore, the research on metallic superconductors still offers many possibilities and new developments.

Dr. Michael Koblishka
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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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