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# Metallic Superconductors - The Workhorses of Superconductivity

Guest Editor:

**Prof. Dr. Michael R. Koblischka**
Superconducting Materials Laboratory, Department of Materials Science and Engineering, Shibaura Institute of Technology, Toyosu, Koto-ku, Tokyo 135-8548, Japan

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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, $Nb_3Sn$). The development of $MgB_2$ 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 $NbSe_2$, $Bi_2Te_3$, etc. offer a simple experimental access to these systems. Therefore, the research on metallic superconductors still offers many possibilities and new developments.

Dr. Michael Koblischka
*Guest Editor*

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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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*Metals* Editorial Office
MDPI, St. Alban-Anlage 66
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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