Special Issue

Revealing the Formation, Growth, Prevalence and Impact of Metal Whiskers

Message from the Guest Editors

Metallic materials are utilized in industrial applications at a large scale. Metal whiskers are hair-like protrusions that spontaneously grow from the surface of certain metals (e.g., Sn, Zn, Cd, Ge or Pb). Though metal whiskering is a commonly observed phenomenon in industrial applications, the exact mechanisms responsible for the formation and growth of these single crystals are not fully understood hitherto. Much more study is needed at multi-length and -time scales to completely unravel the mechanisms driving the formation, growth, and prevalence of metal whiskers. Therefore, it is necessary to amalgamate the aspects of experiments, modeling, and data science for state-of-the-art multi-scale characterization and description of metal whiskers. The quantitative data of whiskers' origin and impact can be essentially utilized for the retrospective design of techniques to reduce the probability of their incidence. This Special Issue is aimed at recent advances in mechanistic and experimental investigation of metallic whiskers, including exploratory study using machine learning models.

Guest Editors

Dr. Anil Kunwar

Faculty of Mechanical Engineering, Silesian University of Technology, Konarskiego 18A, 44-100 Gliwice, Poland

Dr. Johan Hektor

Department of Materials Science and Applied Mathematics, Faculty of Technology and Society, Malmö University, 21119 Malmö, Sweden

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Metals
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
metals@mdpi.com

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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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Prof. Dr. Hugo F. Lopez
Department of Materials Science and Engineering, College of Engineering & Applied Science, University of Wisconsin-Milwaukee, 3200 N. Cramer Street, Milwaukee, WI 53211, USA

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Beijing Advanced Innovation Center of Materials Genome Engineering, State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 30 Xueyuan Road, Beijing 100083, China

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