

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.

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Message from the Editor-in-Chief

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.

Editor-in-Chief

Prof. Dr. Yong Zhang

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