



metals



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Neutron Diffraction Research on Metallic Materials

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Message from the Guest Editor

Development of new advanced metal alloys and composites for many applications is frequently based on the application of neutron beams to probe the materials on an atomic level. While neutron beams are better known for fundamental scientific exploration, they are also frequently employed by industry to study metallic components with low tolerance for failure. In these cases, neutron diffraction can be a vital step both in failure analysis and in qualification of parts before they used.

The gentle, yet penetrating power of neutron beams allows one to non-destructively determine stress anywhere inside metallic components while the component is subjected to realistic conditions of pressure, temperature, applied stress, and even corrosive environments. Since this method is non-destructive, measurements can be taken on the same component before, after, and sometimes during a manufacturing process.

In this issue, we solicit contributions from the leading researchers in stress, solidification, metal phase analysis, aluminum heat treatment technologies, hydrogen in metals and alloys, and studies of hydrogen mobility in thin films.



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Special Issue



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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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