Special Issue

Semi-solid Metal Processing in Combination with Other Technologies

Message from the Guest Editor

Semi-solid metal processing (SSM) is an unconventional method of material forming where the processing temperature exceeds the solidus curve, and where the material is partially melted. Although this method leads to problems during processing, at the same time, SSM makes it possible to produce complicated shapes, even from difficult to form materials. The structure after SSM of high-alloyed steels consists of polyhedral austenite grains and ledeburitic mesh. Some of the possibilities include the connection of semi-solid processing with intensive plastic deformation, heat treatment, and cryogenic treatment, or their combinations. SSM has the potential to be not only a material forming technology, but also a process for obtain promising materials with interesting properties with, for example, higher toughness and wear-resistance. This Special Issue is focused on research in the area of semi-solid processing of metals and on methods such as intensive deformation, heat treatment, and others to find new approaches and advantages for this exciting technology.

Guest Editor

Dr. Hana Jirková

Regional Technological Institute (RTI), University of West Bohemia, Pilsen, Czech Republic

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

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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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