Special Issue

Advanced Forming Process of Light Alloy

Message from the Guest Editors

Light-weight alloys have played increasing important roles in modern industries, enabling sustainable development in an energy-saving and environmentally friendly way. In recent years, the use of light-weight alloys, including aluminum alloy, magnesium alloy, and titanium alloy, has achieved a certain degree of success for aerospace, automotive industry, or civil engineering applications. Additionally, components with complex profiles are always needed to fulfill the designated structure function. In fact, the combination of advanced light-weight alloys and complex-shaped components is of great significance and high efficiency for further weight reduction and performance improvement, whereas inferior ductility and poor formability are usually found in advanced light-weight alloys due to the well-known trade off relationship between strength and ductility. Meanwhile, the complex shape of components further increases the difficulty in the forming process. Thus, the development and application of advanced metal-forming technology in light-weight alloys has become an essential research topic.

Guest Editors

Dr. Hongwu Song

Institute of Metal Research, Chinese Academy of Sciences, Shenyang 110016, China

Dr. Shuaifeng Chen

Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

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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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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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