Special Issue

Development of Intelligent Forging Process for Metals and Alloys

Message from the Guest Editors

Emerging techniques such as Semi-solid Die Forging, Low-stress Fatigue Cropping, Ultra-high-speed Cutting, Counter-roller Spinning, Flat Riveting, Radial Forging, and Precise Rolling Technology have been proposed and widely applied in industries including automotive, aerospace, shipbuilding, and equipment manufacturing. The mechanisms of material plastic deformation, equipment design principles and control strategies involved in these new technologies all significantly influence the final forming outcomes. Therefore, it is essential to conduct targeted research on specific components using these novel forging techniques to determine optimal process parameters and ultimately achieve ideal forming results. Studies concerning simulation of forging, mechanisms of material plastic deformation, energy conversion mechanisms during the forming process, new principles of equipment design, control optimization strategies, and other innovative research on forging processes are relevant to this Special Issue.

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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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