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Editorial

Modern Engineered Materials and Technologies for Metal Forming Applications

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During the last decades the development of modern engineered materials and technologies for metal forming applications to new and existing processes, products, and tool represents an emerging issue both from an industry and from an academic viewpoint. Nowadays, a lot of research activities in the field of metal forming have been accomplished and there are a wide range of applications where the modern engineered materials are used.

The objective of this special issue was to provide a wide spectrum of new information on modern engineered materials and technologies for metal forming applications as well as to provide readers with a representative outlook of the latest achievements in this field. The topics focused on the understanding of the interaction between materials of workpiece and the tool as well as the effect of process parameters and so forth when improving efficiency of process, product quality, and tool life.

This special issue offers a selected and articulated overview of the examined topics. It contains five papers and the details were listed as follows.

Z.-b. Xiao et al. revised the constitutive equation of 2026 Al alloy under hot compression which was done by compensation of temperature considering the impact of the second phase on true stress. It indicated that the revised constitutive equation can give an accurate prediction of the peak stress for 2026 Al alloy and can be used in the hot processing of 2026 Al alloy.

Jindong et al. investigated the cold compression deformation method to reduce the quenching residual stress of 7A85 aluminum alloy thick block forging. It was found that this method has a significant effect on reducing stress if an appropriate amount of compression deformation is chosen. The optimal compression deformation value is about 1%-2%, reducing 70% residual stress for 7A85 aluminum alloy specimens sized $100 \times 60 \times 40$ mm.

Y.-S. Lee et al. in their article titled "Development of a Master Sintering Curve for Al-Mg Alloy," to help an engineer to design pressure assisted sintering process for Al-Mg alloy, developed the master sintering curve for Al-Mg alloy which was investigated for suitable design of pressing pressure for this Al-Mg alloy.

O. V. Berezshnaya et al. investigated the thermostressed state of coating formation at electric contact surfacing of "shaft" type parts. It showed that, owing to the increases in friction coefficient, the change of the speed asymmetry factor has a significant influence on the forming of the coating. The nomograms for determination of the stress on the roller-electrode are illustrated, as well as the finite thickness of the coating as the function of the initial thickness of the compact material and the deformation degree are shown.

P. A. Prates et al. in their article titled "Inverse Strategies for Identifying the Parameters of Constitutive Laws of Metal Sheets" showed a great development of inverse strategies coupled with finite element simulations, namely, in FEMU

strategies for the identification of parameters of constitutive laws describing the plastic behavior of metal sheets. These strategies should be directed towards the simultaneous identification of parameters of any constitutive law, including isotropic and kinematic hardening, and any anisotropic yield criterion.

Acknowledgments

The guest editors hope the information provided in this special issue is useful and offers stimulation to the new development of modern engineered materials and technologies for metal forming applications. Finally, we would like to thank the authors for an excellent contribution of their research works and we also very warmly acknowledged the reviewers for an excellent contribution of their valuable review results.

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