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Binder Assisted Metal Powder Shaping

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Message from the Guest Editors

The use of binder material to facilitate shaping when metal powders are used is usual in most powder manufacturing techniques: powder injection molding, powder hot-embossing, binder jetting, and material extrusion (such as FFF and FDM). Usually, these techniques require different process steps: selection and characterization of materials, optimization and production of mixtures, shaping, debinding, and sintering. These process steps are related, and the variables of each one interact and influence the properties of the final parts. The success of the replication of final parts depends on the characteristics of the powder and binder. The binder has an essential role in the homogeneity of the mixture, shaping process, and the interaction with powders during debinding.

Topics addressed in this Special Issue may include, but are not limited to the following: Powder and binder specified for PIM or Additive manufacturing using binder assisted method; Molding/shaping powder-binder; Debinding and Sintering; Post-processing; Numerical analysis of materials behavior to optimize processing conditions; Industrial applications.

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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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