Special Issue
Additive Manufacturing, Metal Forming, and Structural Integrity of Metallic Components

Message from the Guest Editor Team

The transition toward resource-efficient, digitally supported manufacturing is reshaping the design and production of metallic components. Additive manufacturing, laser-based processing, and advanced metal-forming technologies provide unprecedented freedom in geometry and material utilization, but they also introduce process-specific challenges related to anisotropy, defects, residual stresses, dimensional accuracy, surface condition, and reproducibility. Reliable integration of these technologies into industrial practice therefore requires coordinated research linking process parameters, numerical simulation, experimental characterization, and structural integrity assessment.

This Special Issue aims to present recent advances in the manufacturing and integrity evaluation of metallic components produced by additive, forming, joining, and hybrid processes. Particular emphasis is placed on process design and optimization, thermal and mechanical process simulation, defect formation, fracture and fatigue behavior, and the use of destructive and non-destructive methods for quality assurance. Contributions combining experimental investigations with computational or data-driven approaches are especially welcome, together with studies demonstrating industrial applicability.

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