

Preface

This special edition presents recent advances in the technologies of steel and alloys processing and forming, encompassing both conventional methods and emerging hybrid technologies. The articles address forming techniques such as hot rolling, cold forming, deep drawing, roll bonding, and bimetallic joint fabrication, alongside thermal and thermomechanical treatments including quenching and partitioning, continuous annealing, electromagnetic heating, and recrystallisation. Modern manufacturing and surface engineering approaches — such as wire electrical discharge machining, bi-modal milling, laser surface hardening, fused deposition modelling, laser powder bed fusion, and transient liquid phase diffusion bonding — are examined in terms of their influence on grain size, microstructural evolution, and resulting mechanical properties. The articles provide an integrated perspective on process–structure–property relationships in advanced metal forming and manufacturing technologies.