

## Preface

This special edition presents results of contemporary research on metallurgy, with a particular focus on steel and some pure metals. Emphasis is placed on the relationships between composition, processing, and performance, highlighting topics such as nitrogen alloying, niobium microalloyed steels, microstructure evolution, non-metallic inclusions, and their effects on mechanical properties and microhardness. Emerging challenges, including liquid metal embrittlement and finishing-related phenomena, are addressed alongside advances in additive manufacturing. The volume also extends beyond ferrous alloys to include oxygen-free copper, cobalt-based materials and their thermomechanical analysis, offering a comprehensive view of modern metallurgical science and technology.