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Nota di contenuto	Intro -- Preface -- Organization -- Contents -- Extractive Metallurgy and Recycling of Materials -- Fluidized Bed Roasting of Zinc Sulfide Concentrate: Role of Particle Size -- 1 Introduction -- 2 Present Study -- 3 Results and Discussions -- 3.1 Predicting Contribution of Different Location Calcines Towards Overall Calcine Sulfide-Sulfur Outcome -- 3.2 Minerology Results of Calcines Collected from Different Roaster Locations -- 3.3 Comparison of Calcine Particle Sizes with Degrees of Roasting -- 3.4 Possibilities of Valuable Metal Recovery

from Calcines Post Roasting -- 3.5 Potential Research Opportunities -- 4 Conclusions -- References -- Investigation on Solid-State Carbothermic Reduction Behaviors of Pyrolusite Ore -- 1 Introduction -- 2 Experimental Procedure -- 3 Results and Discussions -- 3.1 Effect of Temperature -- 3.2 Effect of Time -- 4 Conclusion -- References -- Iron Recovery Approach from Steel Slag Using Droplet Coalescence Technique -- 1 Introduction -- 2 Modelling and Numerical Parameters -- 3 Result and Discussion -- 4 Conclusion -- References -- Copper Slag as a Source of Iron: An Overview -- 1 Introduction -- 1.1 Properties -- 1.2 Background and Context -- 2 Economical Aspects -- 3 Conclusion -- References -- Machine Learning Approach for Accurate Slag Eye Predictions in Steelmaking Ladles -- 1 Introduction -- 2 Methodology -- 3 Results and Discussion -- 4 Conclusions -- References -- An Overview of Sustainable Solutions Towards Recycling of Metallurgical Slags -- 1 Introduction -- 2 Recent Advances in Slag Recycling -- 3 Economic Implications -- 4 Some Lab Scale Studies -- 5 Industrial Scale Endeavours -- References -- Structural Materials and Mechanical Metallurgy -- An Investigation on Mechanical and Electrochemical Properties of Ti-6Al-4V alloy by Scheduling Heat-treatment in Pure and + region -- 1 Introduction.
2 Experimental Details -- 3 Results and Discussion -- 3.1 Microstructural Characterization -- 3.2 Mechanical Properties -- 3.3 Electrochemical Analysis -- 4 Conclusion -- References -- Finite Element Modelling in Bones: A Review -- 1 Introduction -- 1.1 Bone Structure and Properties -- 2 Numerical Studies -- 3 Applications -- 4 Challenges and Future Directions -- 5 Case Studies -- 6 Conclusion -- References -- Thermodynamic Study of Novel Fe-Mn-Si Alloys -- 1 Introduction -- 2 Materials and Thermodynamic Models -- 3 Results and Discussion -- 4 Conclusion -- References -- Hydride Induced Degradation of Mechanical Properties of Zr-2.5Nb Alloy -- 1 Introduction -- 2 Atomic Scale-Stress Free Transformation Strain -- 3 Microscopic Scale - Delayed Hydride Cracking -- 4 Mesoscopic Scale - Fracture -- 5 Macroscopic Scale - Component Failure -- 6 Summary -- References -- Investigating Deep Learning-Based Stress Prediction in Particulate Polymer Composites Using Multiple Quality Measures -- 1 Introduction -- 2 Materials and Methods -- 2.1 FEA Simulations -- 2.2 Pix2pix cGAN Stress Analysis -- 2.3 Evaluation Methods -- 3 Results and Discussions -- 4 Conclusion -- References -- Synthesis and Characterization of Ausformed Nanostructured Bainite -- 1 Introduction -- 2 Experimental Procedure -- 3 Results and Discussion -- 4 Conclusion -- References -- Vacuum Brazing of Tungsten and Fe-Co-Ni Alloy Along with Micro-Structural Evaluation of Joint Interface Using SEM -- 1 Introduction -- 2 Experimental Work -- 3 Results and Discussion -- 4 Conclusions -- References -- Corrosion and High-temperature Oxidation -- Water Parameters' Impact on the Corrosion Behaviour of High-Carbon Pearlitic Rail Steel -- 1 Introduction -- 2 Experimental Procedure -- 3 Results and Discussion -- 4 Conclusions -- References.
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Sommario/riassunto

This book presents peer reviewed articles from the International Conference on Fundamental and Industrial Research on Materials-iConFIRM 2023; held from 11th to 14th Dec at Ropar in India. It includes recent advances in the area of mechanics of metallic, nano and energy materials, extractive metallurgy, and processing. Fundamental research works including development and characterization of new alloys, ceramics, composites and nano materials along with advanced characterization techniques such as XRD, SEM and TEM and mathematical modelling, finite element simulations, molecular dynamics, machine learning and similar other advanced numerical, theoretical and experimental techniques in the field of materials and metallurgy.