Preface

This special edition presents a collection of recent research and technological developments in materials science and thermal and energy engineering, with a focus on sustainable materials, biowaste conversion to energy, and phenomena of mass and heat transfer in engineering systems.

Chapter 1: Polymers and Composites focuses on the design, processing, and performance analysis of polymeric and composite materials. Material synthesis innovation, structural efficiency, and application conditions across industrial and engineering sectors are emphasised.

Chapter 2: Biowaste to Energy Conversion explores technologies for transforming biowaste into useful energy carriers. Topics include thermochemical and biochemical conversion processes, system optimisation, and environmental benefits associated with waste-to-energy strategies.

Chapter 3: Heat and Mass Transfer presents studies on the fundamental principles and applied aspects of thermal and mass transport phenomena. The emphasis is placed on numerical modelling of the mentioned processes.

Chapter 4: Thermal Engineering addresses engineering solutions involving water cooling and applications of ice slurry. The chapter highlights system design and methods for improving efficiency in its use.

This edition is designed to serve as a valuable resource for researchers, engineers, and students, fostering innovation and interdisciplinary collaboration.