

# Preface

In this special edition, "Advances in Mass and Thermal Transport in Engineering Materials VI", diffusion phenomena in solids, liquids and gaseous phases with a special focus on evaluation of heat transfer and mass diffusion processes and corresponding experimental, analytical and numerical methods are addressed. The current topical volume presents a large cross-section of some of the recent progress in mass and thermal diffusion and related fields of research. Given the huge breadth of the field, the range of topics covered is accordingly very large.

Materials covered include copper-based nanocomposite materials, liquid Pb, stainless steel, titanium oxide nanotubes, Al-Sr eutectic alloy, Ti-40Ta Alloy, manganese dioxide nanofluids, hydrogen-containing gases in a blast furnace, lava flows and umbu seeds.

Topics include experimental investigation and numerical modelling of heat transfer in various technological processes (thermal management of Li-ion batteries using phase change materials (PCM), finned-tube heat exchanger loaded with a paraffinic PCM, flat-plane solar collector), fundamentals of mass diffusion, phase transformations during high pressure torsion, and extensions to new research in the field of nanotechnology.

Technical applications concern oil recovery, diffusion absorption refrigeration systems and improved material properties for diverse technical applications. Most of these topics are related to numerical analysis and simulations, as well as experimental measurements to predict properties of materials during applications.

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