

Preface

Both mass and thermal transport in solids and liquids have played, and will continue to play, immensely important roles in the discovery of engineering materials, the enhancement of their engineering properties, their manufacture and their longevity in service. Obtaining a detailed understanding of the intricacies of mass and thermal transport enables new ways to be found for improving advanced materials for the benefit of humankind and at the same time, the environment. Studying the huge area of mass and thermal transport has long attracted many materials science and engineering researchers as well as those in closely linked disciplines. This volume is a special topic volume entitled: “Mass and Thermal Transport in Materials and Materials Structures”. It captures a cross-section of the area by covering mass and thermal transport in its broadest possible sense, spanning the atomic scale right up to the macro scale, from basic research on properties right through to actual engineering applications.

In a real sense, the present volume represents a snap shot of the many active mass and thermal transport research topics currently under investigation worldwide. The great breadth of the area of mass and thermal transport is reflected in the correspondingly wide range of topics covered here. Topics range from hydrogen diffusion in a Pd-Cu alloy membrane to the pyrometallurgical processing of complex ores, from the thermal conductivity of YSZ ceramics to microwave absorption of Fe-based nanocomposites, from the thermal properties of hollow spheres to investigating the water-oil separation process, to name just a few.

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