Preface

In this edition of "Advances in Mass and Thermal Transport in Engineering Materials V" diffusion phenomena in solids and liquids with a special focus on characterization of diffusion processes and corresponding experimental and numerical techniques is addressed. Diffusion and diffusion related processes play an important role in the development of advanced engineering materials and associated fields. In-depth knowledge of these different transport phenomena at many levels, from nano to macro, has therefore long attracted the attention of many researchers in materials science and engineering and related disciplines.

The present topical volume captures an extensive cross-section of some of the recent progress in mass and thermal diffusion and related areas. Reflecting the enormous breadth of the field, the range of topics covered is accordingly very large.

Materials covered include classical carbon and alloy steels, titanium and aluminum alloys as well as alloys for hydrogen production. Topics include classical mass and thermal diffusion problems such as multicomponent interdiffusion, phase transformations, coatings and microstructures and extensions to new research in the field of nanotechnology. Technical applications relate to oil recovery, surface quality, and improved material properties for machining and processing. Most of these topics are related to experimental measurements and methods as well as numerical simulations and approaches to predict properties of materials during applications.

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