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Nota di contenuto	Diffusion in Advanced Materials and Processing ; Preface; Table of Contents; Part I Multiscale Understanding in Fundamentals of Diffusion; Growth Kinetics on Nanoscale: Finite Diffusion Permeability of Interfaces; Diffusion Mechanisms in Nanocrystalline and Nanolaminated Au-Cu; Modelling of Oxygen Diffusion and Segregation at Interfaces in Ag-MgO Composites; Stability and Shrinkage by Diffusion in Hollow Nanotubes; A Molecular Dynamics Study of Self-Diffusion in the Core of a Screw Dislocation in Al A Mathematical Formulation for Interfacial Diffusion, Incorporating Deviation from the Classical Random Walk Theory First-Principles Computation of Transition-Metal Diffusion Mobility; An Examination of Diffusion Paths in Terms of Interdiffusion Fluxes and Interdiffusion Coefficients; Diffusion in Metallic Melts; Diffusion in Bulk Glass Forming Alloys- from the Glass to the Equilibrium Melt ; Non-Random Interaction of Vacancies with Atoms during Interdiffusion and Ionic Conductivity in Materials; Part II Enabling Knowledge of Diffusion in Critical Technologies Interdiffusion Behavior in -Phase U-Mo Alloy versus Al-6061 Alloy

Couples Fabricated by Friction Stir Welding Growth Kinetics of Intermetallic Phases in U-Mo vs. Al Alloy Diffusion Couples Annealed at 550°C; The Influence of Solid State Diffusion on Microstructural Development during Solidification; Calculation of Gas Carburizing Kinetics from Carbon Concentration Profiles based on Direct Flux Integration; Assessment of Ternary Multicomponent Diffusion in Alloy 22 (Ni-Cr-Mo); Interdiffusion in (fcc) Ni-Cr-X (X = Al, Si, Ge or Pd) Alloys at 700°C
VisiMat©-Educational Tool for Multicomponent Diffusion in 2 and 3 Dimensions Keywords Index; Authors Index

Sommario/riassunto

The continued development of advanced materials and processes requires an intimate understanding of diffusion mechanisms, and having the ability to model the diffusion-controlled phenomena which occur within materials during processing. This special volume focuses on the identification and modeling of various diffusion mechanisms and phenomena occurring in the advanced materials used in structural, electronic and other applications, as well as those taking place during processes such as deposition, solidification and heat-treatment. The fundamental aspects discussed include: diffusion in nanom
