

Contents

Part I Composite Materials (two or more solid phases)

Continuum Modeling of Diffusive Transport in Inhomogeneous Solids ... 3
Helmut J. Böhm, Heinz E. Pettermann, and Sergio Nogales

Thermal Residual Stresses in Aluminium Matrix Composites 33
F. Teixeira-Dias and L.F. Menezes

**Heat Conduction in Two-Phase Composite Materials with
Three-Dimensional Microstructures and Interfacial
Thermal Resistance 63**
Carlos Frederico Matt and Manuel Ernani Cruz

Part II Porous and Cellular Materials (one or more solid phases and free volume)

Heat Transfer in Graphitic Foams 101
Anthony G. Straatman

Heat Transfer in Polyolefin Foams 131
Marcelo Antunes, José Ignacio Velasco, Eusebio Solórzano,
and Miguel Ángel Rodríguez-Pérez

**Heat Transfer in Polymer Composites Filled with Inorganic
Hollow Micro-Spheres 163**
J.Z. Liang

Radiative Transfer in Two-Phase Dispersed Materials 187
Jaona Randrianalisoa, Rémi Coquard, and Dominique Baillis

Predictions of Effective Thermal Conductivity of Complex Materials	235
Ramvir Singh	
Lattice Monte Carlo Analysis of Thermal Diffusion in Multi-Phase Materials	275
T. Fiedler, I.V. Belova, A. Öchsner, and G.E. Murch	
Optimization of a Unit Periodic Cell in Lattice Block Materials Aimed at Thermo-Mechanical Applications	301
Pablo A. Muñoz-Rojas, Thiago A. Carniel, Emilio C.N. Silva, and Andreas Öchsner	
Computational Model of Porous Media Using True 3-D Images	347
Khairul Alam, Mihnea S. Anghelescu, and Adrian Bradu	
 Part III Consideration of a Fluid (solid phase [structure] and fluid [in liquid and/or gaseous aggregate state])	
Thermal Instabilities in a Fluid Saturated Porous Medium	381
A. Barletta	
New Bio-Inspired Multiphase Thermal Functional Fluid	415
José L. Lage	
Simulation of Turbulent Combustion in Porous Materials with One- and Two-Energy Equation Models	443
Marcelo J.S. de Lemos	