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Heat transport in nanostructures and nanostructured materials is crucial for increasing reliability, lifetime, and maintenance of functionality of nanoscale devices, ranging from micro/nanoelectronics to energy harvesting and bioengineering. The amorphous phase is incorporated on purpose or by default in nanostructures; this may significantly alter their physical properties. Thus, it is important to control the amorphous fraction, to tailor heat transport depending on the desired thermal management strategy.

This book provides an overview of nanofabrication methods that involve both crystalline and amorphous phases, as well as measurement and simulation methods to appraise the thermal conductivity of nanostructures combining the two phases. It covers the issues of the physics of the condensed matter, chemistry, and materials engineering.

Konstantinos Termentzidis is a CNRS researcher and works at the Laboratoire d'Energétique et de Mécanique Théorique et Appliquée, University of Lorraine, France, since 2012. His main scientific interest is the theoretical and computational nanoscale heat transport. He is studying the phonon transport in nanowires, nanotubes, and superlattices with molecular dynamics and has extensively published in this domain. Dr. Termentzidis has elucidated the interaction of phonons with interfaces, defects, and surfaces at the nanoscale, a key point for designing materials with tailored properties and systems with controlled behavior.

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