1. Record Nr. UNINA9911018661703321

Autore	Pattamatta Arvind
Titolo	Fundamentals of Nano- and Microscale Heat Transport / / by Arvind Pattamatta, Sarit K. Das
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	9783031896132
Edizione	[2nd ed. 2025.]
Descrizione fisica	1 online resource (328 pages)
Collana	Mechanical Engineering (R0) Series
Altri autori (Persone)	DasSarit K
Disciplina	621.4021
Soggetti	Thermodynamics Heat engineering Heat - Transmission Mass transfer Quantum statistics Solid state chemistry Engineering Thermodynamics, Heat and Mass Transfer Quantum Fluids and Solids Solid-State Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Fundamentals of Quantum Mechanics -- Fundamentals of Sold-State Physics -- Fundamentals of Statistical Thermodynamics -- Nanoscale Transport Processes -- Microscale and Nanoscale Transport in Single-Phase Fluids -- Phase Change in Minichannels and Microchannels -- Nanofluids -- Measurement Techniques at Microscales and Nanoscales -- Numerical Simulations of Nanoscale Heat Transport.
Sommario/riassunto	This book addresses the fundamentals of Micro and Nanoscale transport in various fields of current interest such as thermal dissipation from electronic devices, thermoelectric energy conversion devices and Micro electro mechanical systems and sensors (MEMS). It provides the understanding of heat transport processes in small dimensions and time scales which is imperative when exploring the unlimited potential that nanotechnology has to offer in areas such as

micro/nanoelectronics, MEMS and NEMS, etc. Since the area of micro and nanoscale heat transport is quite interdisciplinary, the book covers the fundamental knowledge of quantum mechanics, statistical thermodynamics, energy states in solids and classical heat transfer. This book is written is an easy-to-comprehend style in order to cover all of the above mentioned subjects without warranting prerequisites from the interested reader. Students from diverse backgrounds such as Mechanical, Aerospace, and Electrical engineering may find it as text for a graduate level course on this subject while practicing engineers may find this book as a useful reference.