**DESCRIPTION**

Bringing together the concerted efforts of the multicomponent materials community in one decisive reference work, this handbook covers all the important aspects from fundamentals to applications: thermodynamics, microscopic processes, solidification, simulation and modeling. As such, it provides a vital understanding of melt and solidification processes, treating all simulation techniques for continuous and discrete systems, such as molecular dynamics, Monte Carlo, and finite elements calculations.

**ABOUT THE AUTHOR**

Dieter M. Herlach is currently a senior scientist at the German Aerospace Center (DLR) in Cologne as Head of the working group "Undercooling of Materials" and Professor of Physics at the Ruhr-University Bochum, Germany. He gained his PhD from the Technical University Aachen in 1981 and joined the DLR two years later. In 1991 he finished his Habilitation at the Ruhr-University Bochum where he became Full Professor of Physics in 2001.

Dieter M. Herlach has been chairman of various working groups at the European Space Agency (ESA) and the German Physical Society (DPG), a consultant or honorary professor at various Chinese universities, and a visiting professor at Harvard University, USA. Professor Herlach has organized 16 workshops, symposia and conferences, is co-editor of Advanced Engineering Materials, and also has five books, four patents and over 280 journal publications to his name.