1. Record Nr. UNINA9910254033803321 Autore Poirier D. R. Titolo Transport Phenomena in Materials Processing / / edited by David R. Poirier, G. Geiger Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Springer,, 2016 **ISBN** 3-319-48090-1 Edizione [1st ed. 2016.] Descrizione fisica 1 online resource (XII, 660 p.) Collana The Minerals, Metals & Materials Series, , 2367-1696 620.11 Disciplina Soggetti Materials - Analysis Fluid mechanics **Thermodynamics** Characterization and Analytical Technique **Engineering Fluid Dynamics** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Sommario/riassunto This text provides a teachable and readable approach to transport phenomena (momentum, heat, and mass transport) by providing numerous examples and applications, which are particularly important to metallurgical, ceramic, and materials engineers. Because the authors feel that it is important for students and practicing engineers to visualize the physical situations, they have attempted to lead the reader through the development and solution of the relevant differential equations by applying the familiar principles of conservation to numerous situations and by including many worked examples in each chapter. The book is organized in a manner characteristic of other texts in transport phenomena. Section I deals with the properties and mechanics of fluid motion; Section II with thermal properties and heat

transfer; and Section III with diffusion and mass transfer. The authors depart from tradition by building on a presumed understanding of the

relationships between the structure and properties of matter, particularly in the chapters devoted to the transport properties (viscosity, thermal conductivity, and the diffusion coefficients). In

addition, generous portions of the text, numerous examples, and many problems at the ends of the chapters apply transport phenomena to materials processing.