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Titolo	Heat Transfer of Laminar Mixed Convection of Liquid // by De-Yi Shang, Liang-Cai Zhong
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ISBN	3-319-27959-9
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (232 p.)
Collana	Heat and Mass Transfer, , 1860-4854
Disciplina	530
Soggetti	Continuum mechanics Soft condensed matter Thermodynamics Heat engineering Heat transfer Mass transfer Mathematical physics Continuum Mechanics Soft and Granular Matter Engineering Thermodynamics, Heat and Mass Transfer Mathematical Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Introduction -- Conservation Equations for Laminar Mixed Convection -- An Innovative Similarity Transformation -- Similarity Transformation of Governing Partial Differential Equations -- Hydrodynamics -- Heat Transfer -- Similarity Transformation of Governing Partial Differential Equations -- Velocity Fields -- Skin-Friction Coefficient.- Temperature Fields -- Theoretical Heat Transfer Equation and Wall Temperature Gradient -- Effect of Local Prandtl Number on Wall Temperature Gradient -- Formulization Equations of Wall Temperature Gradient -- Verification of Formulated Correlation Equations on Wall Temperature Gradient.
Sommario/riassunto	This book presents a new algorithm to calculate fluid flow and heat

transfer of laminar mixed convection. It provides step-by-step tutorial help to learn quickly how to set up the theoretical and numerical models of laminar mixed convection, to consider the variable physical properties of fluids, to obtain the system of numerical solutions, to create a series of formalization equations for the convection heat transfer by using a curve-fitting approach combined with theoretical analysis and derivation. It presents the governing ordinary differential equations of laminar mixed convection, equivalently transformed by an innovative similarity transformation with the description of the related transformation process. A system of numerical calculations of the governing ordinary differential equations is presented for the water laminar mixed convection. A polynomial model is induced for convenient and reliable treatment of variable physical properties of liquids. The developed formalization equations of mixed convection heat transfer coefficient have strong theoretical and practical value for heat transfer applications because they are created based on a better consideration of variable physical properties of fluids, accurate numerical solutions and rigorous formalization equations combined with rigorous theoretical derivation. This book is suitable for scientific researchers, engineers, professors, master and PhD students of fluid mechanics and convection heat and mass transfer.
