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Autore	Blossey Ralf
Titolo	The Poisson-Boltzmann Equation : An Introduction / / Ralf Blossey
Pubbl/distr/stampa	Cham, Switzerland : , : Springer Nature Switzerland AG, , [2023] ©2023
ISBN	9783031247828 9783031247811
Edizione	[First edition.]
Descrizione fisica	1 online resource (113 pages)
Collana	SpringerBriefs in Physics Series
Disciplina	512.9
Soggetti	Equations Poisson's equation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Derivation of the Poisson-Boltzmann equation -- Generalizations of the Poisson-Boltzmann equation -- Theory and its Confrontation with Experiment.
Sommario/riassunto	This brief book introduces the Poisson-Boltzmann equation in three chapters that build upon one another, offering a systematic entry to advanced students and researchers. Chapter one formulates the equation and develops the linearized version of Debye-Hückel theory as well as exact solutions to the nonlinear equation in simple geometries and generalizations to higher-order equations. Chapter two introduces the statistical physics approach to the Poisson-Boltzmann equation. It allows the treatment of fluctuation effects, treated in the loop expansion, and in a variational approach. First applications are treated in detail: the problem of the surface tension under the addition of salt, a classic problem discussed by Onsager and Samaras in the 1930s, which is developed in modern terms within the loop expansion, and the adsorption of a charged polymer on a like-charged surface within the variational approach. Chapter three finally discusses the extension of Poisson-Boltzmann theory to explicit solvent. This is done in two ways: on the phenomenological level of nonlocal electrostatics and with a statistical physics model that treats the solvent molecules as molecular dipoles. This model is then treated in the mean-field

	approximation and with the variational method introduced in Chapter two, rounding up the development of the mathematical approaches of Poisson-Boltzmann theory. After studying this book, a graduate student will be able to access the research literature on the Poisson-Boltzmann equation with a solid background. .

2. Record Nr. UNINA9910898593903321

Autore	Ivanov Vitalii (Manufacturing engineer)
Titolo	Fundamentals of Manufacturing Engineering Using Digital Visualization / / by Vitalii Ivanov, Artem Evtuhov, Ivan Dehtiarov, Justyna Trojanowska
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	9783031743603 3031743601
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (115 pages)
Collana	Springer Tracts in Mechanical Engineering, , 2195-9870
Altri autori (Persone)	EvtuhovArtem DehtiarovIvan TrojanowskaJustyna
Disciplina	620.0042
Soggetti	Engineering design Computer-aided engineering Industrial engineering Automation Engineering Design Computer-Aided Engineering (CAD, CAE) and Design Industrial Automation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Preface About Authors Acknowledgment -- Introduction to Manufacturing Engineering -- Overview of Manufacturing -- Locating -- Product Quality -- Technological Processes in Machining -- Machining Methods.
Sommario/riassunto	This open access book offers a guide to core principles and practices of

manufacturing engineering. It covers the design of, together with technological and measurement issues for, technical systems. Locating charts and setup schemes describing different machining processes are included. Concepts of product quality, with a focus on accuracy indicators, machining accuracy, roughness, and the impact of surface quality on exploitation properties are also explained. Furthermore, key machining methods, including turning, milling, hole machining, grinding, and gear machining, are analyzed in depth, covering their principles, applications, and techniques. The book is enriched by QR codes, linking to a mobile application presenting additional information about the content, for an interactive and extended learning experience. It also uses illustrations visualized with digital tools to promote a better understanding of the concepts. Overall, this book provides students, educators, and practitioners in manufacturing engineering with a comprehensive, accessible and interactive resource .