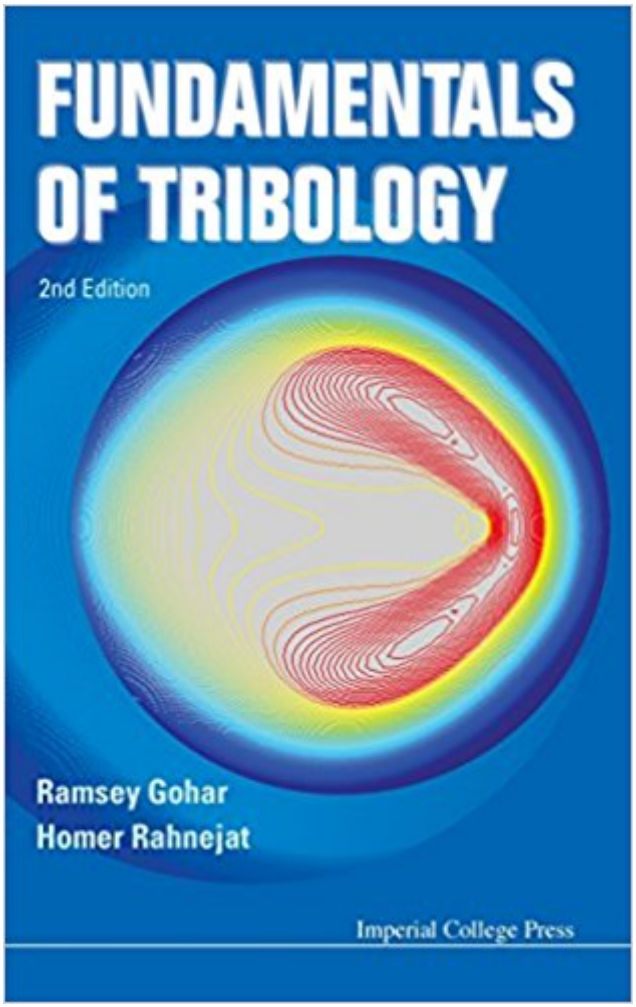
Fundamentals Of Tribology (2nd Edition)



Synopsis

Fundamentals of Tribology deals with the fundamentals of lubrication, friction and wear. It begins by introducing the readers to the importance of tribology in everyday life and a brief history of the subject. It then describes the nature of rough surfaces and mechanics of contacting elastic solids and their deformation under load and friction in their relative motion. The book goes on to discuss the importance of lubricant rheology with respect to viscosity and density. Then, the principles of hydrodynamic lubrication are covered with derivations of the governing Reynolds and energy equations. Applications of hydrodynamic lubrication in various forms of bearings - journal bearings, thrust bearings and externally pressurized bearings - are outlined. The important and still evolving subject of elastohydrodynamic lubrication is treated in some detail, both at its fundamentals as well as its applications in thin shell or overlay bearings, cam-followers and internal combustion engine pistons. The fundamentals of biotribology are also covered, particularly its applications to endo-articular mammalian joints such as hip and knee joints and their arthroplasty. In addition there is a treatment of the rapidly emerging knowledge of tribological phenomena in lightly-loaded vanishing conjunctions (nanotribology) in natural systems and very small devices such as MEMS and high density data storage media. This book targets the undergraduate and postgraduate body as well as engineering professionals in industry, where often a quick solution or understanding of certain tribological phenomenon is sought. The book can also form an initial basis for those interested in research into certain aspects of tribology.

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