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The Application of Biofluid Mechanics

Boundary Effects on Phoretic Motions of Colloidal Spheres

Springer

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Preface

In recent years, the pace of technological innovation is becoming more and more rapid, evolving from the exploration of phenomena from a traditional macroscopic point of view to the research of present microscopic scale biophysical phenomena. Among these researches, the research and development of nanomedicine and nanomaterials are drawing the attention of scientists and scholars, which makes it in a sense approximate to "Getting to know the world from one nut".

The human body is an organism consisting of cells, the size scale of which ranges from several microns to several nanometers. Under such scale, the mobility behavior appears to be very significant, so it is also studied by many experts in biomedical fluid mechanics.

This book aims to discuss various mobility behaviors. The content is divided into two parts: one is the concentration gradient degree as the driving force of diffusion and penetration motions; and the other is temperature gradient-driven thermocapillary and thermophoretic motions. Among this, the diffusiophoresis and penetrate motion are mostly applied in the biomedical field such as drug delivery, purification, as well as the behavior description of immune system, etc.; the thermocapillary and thermophoresis are closely related to semiconductors production and removal of floating impurities. The Appendix contains the comparison and analysis of motion of colloidal particles in the gravitational field situation with the motion action. Eventually, there are relevant computer programs that are summarized into 150 pages. This part is written in FORTRAN language, for scholars to make further applications, and also for the general readers of nonengineering background to appreciate and use as references.

In short, I hope the publication of this book will be an entry for readers interested in motion action.

Po-Yuan Chen

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