Biochemistry & Biophysics

SERIES IN COMPUTATIONAL BIOPHYSICS
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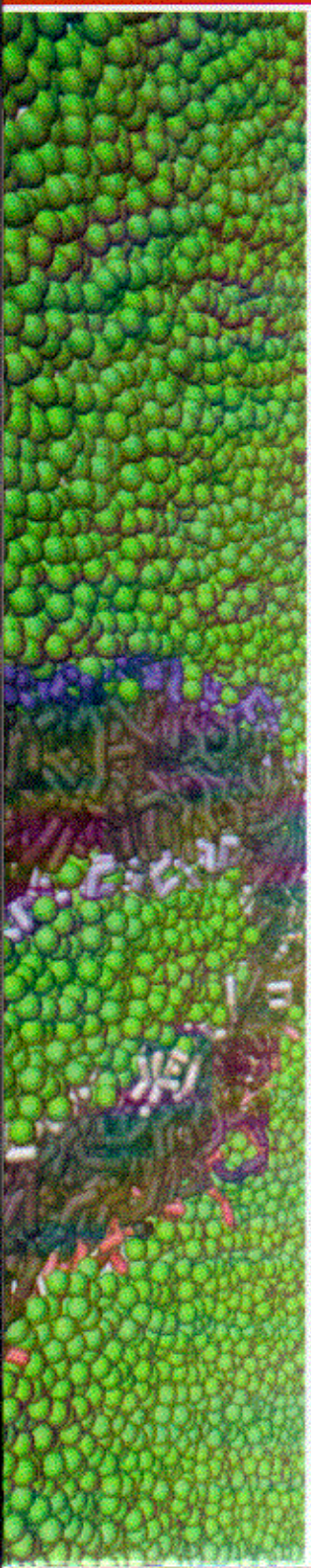

"The chapters in this book survey the progress in simulating biomolecular dynamics.... The images conjured up by this work are not yet universally loved, but are beginning to bring new insights into the study of biological structure and function. The future will decide whether this scientific movement can bring forth its Picasso or Modigliani."
—from the Foreword by Peter G. Wolynes, Bullard-Welch Foundation Professor of Science, Rice University

This book highlights the state of the art in coarse-grained modeling of biomolecules, covering both fundamentals as well as various cutting edge applications. Coarse-graining of biomolecules is an area of rapid advances, with numerous new force fields having appeared recently and significant progress made in developing a systematic theory of coarse-graining. The contents start with the first fundamental principles based on physics, then survey specific state-of-the-art coarse-grained force fields of proteins and nucleic acids, and provide examples of exciting biological problems that are at large scale, and hence, only amenable to coarse-grained modeling.

Features

- Introduces coarse-grained models of proteins and nucleic acids
- Showcases applications such as genome packaging in nuclei and understanding ribosome dynamics
- Gives the physical foundations of coarse-graining
- Demonstrates the use of models for large-scale assemblies in modern studies

Garegin A. Papoian is the first Monroe Martin Professor with appointments in the Department of Chemistry and Biochemistry and the Institute for Physical Science and Technology at the University of Maryland.

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