Molecular Theory of Solutions

General Concepts for Structure and Dynamics

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An authoritative guide on both the structural and dynamic properties of solutions

KEY FEATURES

- Collates discussion of both dynamic and structural effects in a single volume
- Highlights contemporary computational approaches and discusses the benefits and drawbacks of novel research tools
- Provides foundational guidance on solution and solvation mechanisms and science

DESCRIPTION

Molecular Theory of Solutions: General Concepts for Structure and Dynamics presents basic concepts from modern molecular theories of solutions in order to rationalize underlying structural and dynamic effects. Sections cover the properties of solutions and solvation mechanisms, basic concepts from thermodynamics, statistical mechanics and molecular theories of solutions, alongside important experimental observations. The book then discusses basic principles of hydrodynamics and transport theory, with the corresponding outcomes used to highlight various concepts for the theoretical study of effective charge transport, electrokinetic flows and hydrodynamic interactions. The influence of external electric fields in terms of electrokinetic transport, as well as ion correlations are also highlighted.

Other sections of note cover methods and models for particle-based computer simulation approaches at various length and time scales, providing insights into how molecular theories of solutions and simulations can be combined to produce more accurate theories and a more reliable description of solution effects.

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