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Chain Ligands; Ligand Steric Effects; Organometallic Complexes; Catalysis; Transition Metal Clusters; Main Group Molecular Mechanics; Small Molecules; Large Systems; Summary; References

Computational Methods for Modeling Polymers: An Introduction  
Going From Small Molecules to Large Ones; Overview of the Literature; The Scope of Quantum Mechanical Calculations for Polymers; Molecular Mechanics and Atomistic Simulations; General Principles of Molecular Dynamics; General Principles of the Monte Carlo Method; Not All Macromolecules are Alike: What Works for Proteins May Not Work for Synthetic Polymers; Single Chain Studies; Simple Polymer Chain Models; The Venerable Rotational Isomeric State Model; Dynamic Rotational Isomeric State (DRIS) Model

Monte Carlo Simulations of Single Chains  
Applications of Molecular Dynamics Studies of Single Chains; Modeling Amorphous Polymers in the Bulk; Applications Based on Molecular Dynamics Methods; Applications Based on Monte Carlo Methods; Polymer Reference Site Interaction Model (PRISM); Concluding Remarks; Acknowledgments; References; High Performance Computing in Computational Chemistry: Methods and Machines; Introduction; Background Concepts and Nomenclature; Nonuniform Memory Access (NUMA); Granularity of Tasks; Load Balance; Amdahl's Law; Application Performance Modeling

Programming Models and Tools  
Parallel Programming Languages and Environments; High Performance FORTRAN; Message Passing; Ada; Occam; Linda; Strand and PCN; Requisite Computer Science Efforts; Parallel Linear Algebra; Performance Analysis; Large-Scale Software and Message Passing; Partial Review of Chemistry Applications

Development; General Overview; The LCAP Project; Molecular Electronic Structure; Survey of Parallel Electronic Structure Developments; Molecular Dynamics; Reactive Scattering and Quantum Dynamics; Conclusions; Concept Glossary; Appendix; MPP Systems; MPP Hardware and Software

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Sommario/riassunto

Volume 6 of the successful series 'Reviews in Computational Chemistry' contains articles of interest to pharmaceutical chemists, biological chemists, chemical engineers, inorganic and organometallic chemists, synthetic organic chemists, polymer chemists, and theoretical chemists. The series is designed to help the chemistry community keep current with the many new developments in computational techniques. The writing style is refreshingly pedagogical and non-mathematical, allowing students and researchers access to computational methods outside their immediate area of expertise.

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