

B. Montgomery Pettitt is the Hugh Roy and Lillie Cranz Cullen Professor of Chemistry and Professor of Physics, Computer Science, Biology and Biochemistry at The University of Houston. He earned his B.S. and Ph.D. from the University of Houston, was a Postdoctoral Fellow at the University of Texas at Austin and an NIH Fellow at Harvard University. His research ranges from modeling the behavior of liquids to work aimed at elucidating the nature of biomolecules tethered to high tech chip sensors. Using biological molecules tethered to chips creates technology for medical diagnosis, drug discovery and even computing. Yet, the fundamental problem is the lack of theories capable of making accurate predictions to be used in device design. His theoretical research interests led to the development of methods for calculating binding constants, phase behavior, internal conformational structure and equilibria of biopolymers near surfaces and in aqueous solution. Conformational stability studies rely on the development of advanced theoretical and simulation methods that are applied to multicomponent solutions as well as fundamental work on the nature of the hydrophobic effect and wetting of surfaces. Other specific recent research interests include understanding the structure of proteins and nucleic acids in solution and on surfaces, predicting the thermodynamics of solutions, including water, ions, polar biomolecular solutes and other condensed phase systems via theoretical methods and development of methods to compare and search genomes and other complex systems of information.