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C.M. Yip

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The [Biomolecular Engineering](#) web site offers more information about Prof. Yip's research group.

Research Interests:

Molecular self-assembly focusing on protein-ligand and biomolecular complexes and elucidation of the mechanisms associated with the development of solution and solid-state structure and molecular conformation. Study of biomolecular association and ligand-receptor interactions using oriented molecular arrays at interfaces. Application of scanning probe microscopy to the characterization of biomolecular processes and structures.

Research Program:

Direct elucidation of the mechanisms governing molecular self-assembly has clear implications for understanding and possibly controlling processes ranging from the crystallization of biomolecules and pharmaceuticals to the formation of protein complexes and the interaction of protein and drug molecules with cellular membranes and biomimetic substrates. The ability to acquire *in situ* real-space information would thus represent a significant advance towards understanding the kinetics and mechanics of molecular self-assembly. Our research program focuses on the application of *in situ* scanning probe microscopy in combination with other biophysical characterization techniques including circular dichroism, light scattering, X-ray scattering, NMR spectroscopy, and infrared and Raman spectroscopy to the study of self-assembled systems ranging from molecular and protein crystallization to the formation of ligand complexes and direct measurement of intermolecular forces. Collaborations with structural biology and crystallography research groups at the University of Toronto in addition to external programs with pharmaceutical companies offer the opportunity to study a wide variety of biomolecular phenomena and processes of therapeutic interest.

Please send comments or enquiries to: webmaster.ibbme@utoronto.ca

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