Research keywords: Polymer-based materials for: sensing and biosensing, water remediation, controlled and triggered drug delivery, Janus particles, controlled colloid assembly, photonic materials, and artificial muscles.

R&D capabilities: Polymer/materials synthesis and characterization, device fabrication, analytical measurements.

Techniques and instrumentation: Optical, fluorescence, electron, and atomic force microscopies; contact angle; surface plasmon resonance spectroscopy; ellipsometry; gel permeation chromatography; light scattering; reflectance and UV-vis spectroscopy; quartz crystal microbalance.

Examples of industrial collaborations and commercialization:

• pH sensor development

Worked closely with a local manufacturer to develop an easy to use and inexpensive colorimetric sensor for measuring the pH of aqueous solutions.

• Polymers for water remediation

Collaborated with Esso Imperial Oil to develop polymer-based approaches to remove naphthenic acids and heavy metals from water.

• Polymers as adhesives

Worked with local entrepreneurs to develop a polymer formulation for a specific application that required special adhesive properties.

Licensing opportunities: representative patents and invention reports:

Potential applications: Sensing, biosensing, drug delivery, actuators, valves.