

Materials Design Synthesis & Characterization

The Xerox Research Centre of Canada has invented and commercialized innovative materials for decades. You can use this expertise to identify the specialty materials you need.



What We Offer

XRCC can help you define, develop, and demonstrate specialized materials that you require to enable or improve your technology.

Fine Chemical and Polymer Synthesis

XRCC has extensive organic materials design, synthesis, and characterization expertise. We can supply quantities from lab (mg) to pilot scale (kg). Our scientists and engineers work together to deliver high-purity materials using cost-efficient, sustainable processes.

Custom Formulation

We prepare and evaluate a diverse range of formulations, from specialty inks and polymer-based coatings to challenging materials such as phase-changing waxes and gels. We can tailor-make blends in the lab or pilot plant to meet your specific requirements.

Polymer Composites

Polymer composites are at the forefront of modern plastics technology. XRCC has a long history of innovation in composite materials, including core-shell and encapsulated materials as well as organic-inorganic hybrids.

Materials Design

Materials Design

- Quantum mechanical calculations (molecular property estimation)
- Semi-empirical calculations (bulk materials properties, surface properties, materials interactions)
- Property prediction

Organic Synthesis

- Colorants (dyes and pigments)
- Gellants
- Building blocks for self-assembly
- Electronic materials (semiconductors, charge transport molecules, etc.)
- Specialty monomers
- Biomaterial derivatives
- Polymer additives
- Photochromic materials

Polymer Design and Synthesis

- Random and block co-polymers
- Living radical polymerization
- Anionic polymerization
- Enzymatic polymerization
- Specialty condensation
- Reactive extrusion, blending and emulsification, cross-linking

Formulation Development

- Particle design
- Controlled-release and stimulus-responsive agents
- Solvent-based polymer coating formulations
- Specialty varnishes
- Security materials

Materials Characterization

- UV-Vis and fluorescence spectroscopy
- Light microscopy, SEM/TEM and AFM
- Rheology
- NMR (400 MHz multinuclear), FTIR and PXRD
- DSC and TGA
- ICP atomic emission spectroscopy
- HPLC and GPC
- Cyclic voltammetry

Composites

- Micro- and nanoparticle / polymer composites
- Electronic materials / polymer composites
- Controlled internal composite structures



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