



Faculty of Engineering and Applied Science Chemical Engineering Seminar Series



Flocculation of mature fine tailings: Is there a solution in sight for the Canadian oil sands environmental challenge?

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Dupuis Hall, Room 215



ABSTRACT

Oil sands are a strategic resource for Canada, but despite technological advances in extraction techniques, the treatment of tailing ponds resulting from bitumen extraction is plagued by many environmental challenges. The crucial technical challenge is to separate bitumen from the sand and clay particles, then flocculate or stack the clay particles to release water that can be recycled to the bitumen extraction process. The clays can then be placed in the mine, giving rapid reclamation without forming tailing ponds that may take decades to be reclaimed.

A key opportunity in oil sands is designing polymers to control the properties at the interface between water droplets and the oil phase, and at the interface between clay particles and both the aqueous phase and the oil phase. The techniques being investigated in my research group under the Campus Alberta Innovates Program (CAIP) Chair are essential tools in developing polymer flocculants that are more effective than the current generation of commercial additives, which were not designed either to perform in the presence of bitumen or to efficiently stack the clay particles for efficient dewatering.

In this presentation I will review the state-of-the-art in polymer flocculants for oil sands tailings treatment, and the new approaches being developed in my group to solve this pressing Canadian problem.