

## Greening the Oil Sands

“Think of a train car filled with molasses”. That’s the image offered when Dr. Jason Clyburne describes the challenge of transporting oil sands bitumen by rail.

“Bitumen is a key source of energy for North America and around the world,” says Dr. Clyburne, a Canada Research Chair in Environmental Science and Materials at Saint Mary’s University, “but the viscosity of this material makes it problematic to transport.”

In a project funded by Imperial Oil and the University of Alberta-based Institute for Oil Sands Innovation (IOSI), Dr. Clyburne and a team of Saint Mary’s student researchers are working to develop an effective and affordable chemical process to reduce the viscosity of oil sands bitumen and allow it to flow freely enough to be carried safely and efficiently through pipelines.

Dr. Clyburne is a founding member of Saint Mary’s Atlantic Centre for Green Chemistry and was instrumental in establishing the Centre as a nexus for research, outreach and education. A pioneer in sustainable chemistry and the use of designer chemicals and materials to remove environmentally hazardous substances from industrial processes, he has had several technologies explored for industrial applications.

“People ask whether it’s possible to work with oil sands resources in an environmentally sensitive way,” he says. “I believe it is, and it should be a national priority. Some oil-derived materials are simply irreplaceable and we will always need a petroleum industry to provide these key materials.”

Clyburne explains that since we have bitumen as a resource, we should find ways to develop it responsibly as we transition to a lower carbon future. “We have an opportunity to be energy independent,” he says. “The more efficient we are at bitumen processing, the better and less expensive it will become, both in terms of the cost and the environmental footprint.”

For Zoe Paula, a fourth year Honours chemistry student, working with Dr. Clyburne on bitumen research is wonderful preparation for a future career. “It’s so exciting to be involved in something this relevant to Canada’s energy needs,” she says.

Graeme Soper shares Paula’s enthusiasm. “The excitement comes from harnessing the most benefit from our resources,” says the third year graduate student. “There’s nothing pie-in-the-sky about the research we’re doing with Dr. Clyburne. There’s tremendous, real-world potential in finding a greener method of handling and transporting bitumen. It’s in our interest to develop and rely on our own resources.”

Dr. Clyburne is quick to credit the Institute for Oil Sands Innovation (IOSI) with facilitating connections between university researchers and major, private-sector industries. “There’s much to be gained from learning from each other,” he says. “For a Canadian researcher, working with IOSI is a virtually unparalleled experience.”