HAJIM SCHOOL OF ENGINEERING & APPLIED SCIENCES
UNIVERSITY of ROCHESTER

Department of Chemical Engineering

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Department of Chemistry

"Switchable Solvents"

December 10, 2014
3:25 p.m.
202 Gavett Hall

For many practical applications, the ability to "switch" a solvent's properties during a process would be exceedingly useful. Imagine, for example, a solvent that is capable of dissolving a desired product during an extraction, and then afterwards can be "switched off" so that it is no longer capable of dissolving the product. The product would then precipitate and be easily collected, without any need for solvent distillation. The author and his group has invented three classes of switchable solvents: switchable-polarity solvents (SPS), switchable-hydrophilicity solvents (SHS) and "switchable water" (i.e. aqueous solutions of switchable ionic strength). The presentation will describe these three technologies and then focus on molecular design for applications and the minimization of environmental impact.

Dr. Jessop is the Canada Research Chair of Green Chemistry at Queen's University in Kingston and the Technical Director of GreenCentre Canada. After his Ph.D. (British Columbia, 1991) and a postdoctoral appointment (Toronto, 1992), he did contract research in Japan with R. Noyori (Nobel Prize 2001). As a professor at the University of California-Davis (1996-2003) and since then at Queen's, he has studied green solvents and the chemistry of CO_2 and H_2. Recent distinctions include the Eni Award for New Frontiers for Hydrocarbons (2013), Fellowship in the Royal Society of Canada (2013), the Canadian Green Chemistry & Engineering Award (2012), the Killam Research Fellowship (2010), the Queen's University Award for Excellence in Research (2010), and the NSERC Polanyi Award (2008). He has chaired two international conferences and helped create GreenCentre Canada, a National Centre of Excellence for the commercialization of green chemistry technologies. Switchable Solutions Inc. and Forward Water Technologies Inc. are spin-off companies based upon Dr. Jessop's switchable solvents.