

H2Only: Smart filters for efficient oil/water separation

In a world that relies heavily on the use of crude oil as an energy source, clean oil recovery and spill remediation is of dire importance. Removing oil from surfactant stabilized oil-in-water emulsions has become an issue in numerous industries as current separation processes are tedious and wasteful of resources. Our research group has developed functionalized 'smart' filters that can selectively and efficiently separate the oil from oil-in-water emulsions. These filters are fabricated through a one-step thermally grafted polymer approach with minimal environmental impact. In a real-world scenario, these filters could be used to separate an emulsified organic phase from the aqueous phase when steam is used to extract crude oil from sands or at the surface of an ocean after an oil spill. In this presentation, I will discuss the environmental and operational advantages of this novel filter and its potential to improve the cleanliness of a normally dirty industry.