

## Membrane separations to obtain meaningful samples from the environment: dissolved organic matter in water as a case study

Dr. Peter Pfromm, Chemical Eng. & Bioengineering

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Many areas of inquiry related to the environment require information on the composition of air and water, including particulate matter, and often at ppm level concentrations. Remote sensing is sometimes an option, but the composition of particulate matter and any information on water below the immediate surface is only accessible through sampling. Sampling methods must be rugged, portable, rapid, and reproducible under challenging field conditions. Sampling must be representative and target properties and materials must remain unaltered.

A brief overview of options enabled by membrane separations will be given. A case study of a successful method development to collect samples of dissolved organic matter (DOM) from seawater via reverse osmosis and electrodialysis will be discussed. This method has been adopted in the marine chemistry community to address gaps in global carbon balances regarding DOM, and to resolve specific issues of composition, origin, and fate of one of the largest dynamic carbon reservoirs on Earth.



*Dr. Peter Pfromm is a Professor in the Dept of Chemical Engineering and Bioengineering at WSU Pullman. Pfromm is inventor or co-inventor of three U.S. patents and has published over 70 papers in the peer reviewed literature. His current research interests focus on ammonia synthesis at mild process conditions to store renewable energy, and advanced atomic force microscopy techniques to obtain real time information on heterogeneous hydrogenation at solid/liquid interfaces with atomic-level resolution.*