

Amgen Seminar Series in Chemical Engineering

in
Cherry Auditorium, Kirk Hall, 1 PM

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Creating a chemosensor device for the detection of thiocyanate ions
in seawater – a forensic strategy to combat cyanide fishing

By



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Cyanide fishing poses a threat to coral-reef systems around the world. Fish caught by cyanide fishing will produce thiocyanate ions as a metabolic product that could serve as a marker for this activity. There needs to be a chemosensor device that is both sensitive and selective to thiocyanate ions to aid in the identification of fish obtained by cyanide fishing. Porphyrins with metal centers present good candidates for chemosensors due to their ability to bind thiocyanate ions and be analyzed photo- and electrochemically. We are also developing on a handheld device using active and inactive electronics, along with the computing power of a Raspberry Pi®, to mimic cyclic voltammetry measurements to selectively detect thiocyanate with the chemosensor substrates immersed directly in seawater samples.

Bio: Clifford Murphy completed his B.S. Chemistry at Saint Michael's College in Winooski, VT in 1996 and his Ph.D. in Physical Inorganic Chemistry at Binghamton University (SUNY) in 2003. While working for Wayne Jones at Binghamton he completed his dissertation "Energy-transfer enhanced quenching in fluorescent conjugated polymer chemosensors". After completing a postdoctoral faculty fellowship at Boston University, he joined the faculty at Roger Williams University to teach general and physical chemistry courses starting in 2006. Research in the Murphy group has focused primarily on renewable energy technologies and chemosensor strategies. Other interests include the chemistry of cooking, especially with respect to dietary constraints.



Diver simulating cyanide fishing

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