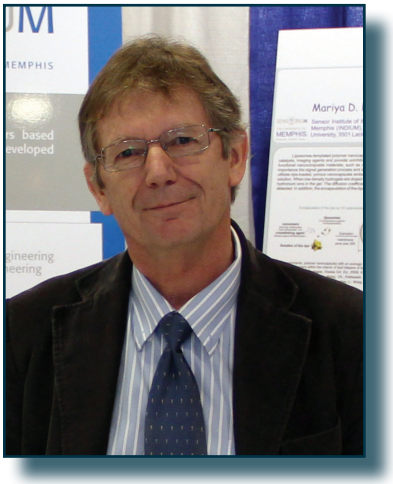
University of Minnesota
Driven to Discover℠

Department of Chemistry

Seminar

9:45 a.m. Thursday, March 7, 2013 • 331 Smith Hall



Professor

Erno Lindner

Department of Chemistry
University of Memphis

Optical and Electrochemical Sensors for the Analysis and Monitoring of Small Sample Volumes

Research interests: development of biomedical sensors based on microfabrication technology, the design and evaluation of instrumentation systems utilizing these sensors, and applications of these instrumentation systems to clinically important biomedical problems.

Website: http://www.chem.memphis.edu/people/faculty/Lindner/elindner.htm

Abstract

In the last few years the focus of the research in my group was the development of chemical sensors for the analysis and monitoring of biological samples. I will use two examples to demonstrate our approach.

In the first example, I will discuss our efforts towards the development of an electrochemical sensor for feedback controlled anesthesia. Propofol is a widely used, potent intravenous anesthetic for ambulatory anesthesia and long-term sedation. Although propofol can be oxidized electrochemically, monitoring its concentration in biological matrixes is very challenging due to (i) low therapeutic concentration, (ii) high concentrations of easily oxidizable interfering compounds in the sample, and (iii) fouling of the working electrode.

In my second example, I will show some preliminary results with a novel optical sensor platform in which the indicator dyes are entrapped in hollow nanocapsules with nanometer-thin walls and controlled porosity. The porous nanocapsules retain molecules larger than the pore size but provide ultrafast access to their interior for molecules and ions smaller than the pore size. Dye-loaded nanocapsules are immobilized in a polyvinyl alcohol (PVA) matrix with high solvent permeability and rapid analyte diffusion. This approach provides robust sensing films with fast response and extended lifetime

Host: Philippe Buhlmann
Refreshments will be served prior to the seminar.