

***UNIVERSITY OF RHODE ISLAND***  
***Department of Chemistry***

***SEMINAR***

***Room 105 Beupre***  
***3:00 P.M, Monday, Nov. 21, 2016***

***Prof. Kwok-Fan Chow***

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***Lowell, MA***

***“Naked-Eye Electrochemical  
Sensor”***

***HOST***

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## **Naked-Eye Electrochemical Sensor**

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### **Abstract**

In this presentation, we report an electrochemical sensing platform that is capable of sensing analytes on a working electrode and providing a visual readout of the analyte concentration on a silver band counter electrode in a microchannel. The display mechanism relies on the oxidation of metallic silver as a complementary reaction to the sensing reduction reaction. The silver band counter electrode is arranged longitudinally in a microchannel while the frontal tip of the band electrode directly faces a gold working electrode, which lies across the microchannel. The silver oxidation always occurs at the band electrode's tip region that faces the working electrode due to the Ohmic potential drop across the solution in the microchannel. The decrement of the silver electrode, which is clearly measurable with the naked eye, correlates linearly with an analyte concentration and with an analyte feeding rate. The platform design is also effective for a model analyte of horseradish peroxidase-avidin in the dynamic range of 0.1 – 3.0  $\mu\text{g/mL}$ .