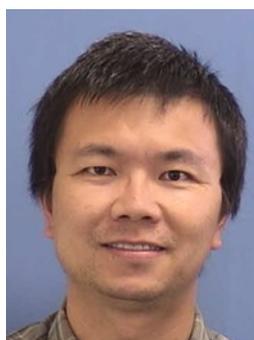




## SEMINAR

### Amplification-by-Polymerization and Electrochemical Microfluidics in Biosensing



Amplification-by-polymerization approach has been developed to allow detector-free visualization of specific DNA sequences for which dynamic polymer growth is used in signal amplification. In particular, surface-initiated polymer growth was regulated by the immobilization of chain transfer agents on the Au surface where DNA hybridization occurred. Significant improvement in assay sensitivity was realized by enhancing polymer growth rate and reducing background noises caused by nonspecific adsorption. Direct visualization of fewer than 2,000 copies of a short oligonucleotide sequence was demonstrated in a detector-free fashion.

An aptamer-based label-free microfluidic biosensor for the electrochemical detection of vasopressin has been developed. The detection area consists of aptamers immobilized on carbon nanotubes which specifically capture the vasopressin molecules in solution resulting in changes in conductivity across the sensor. We report a limit of detection of 43 pM in standard solutions and demonstrate high detection specificity toward vasopressin when different interferents are present. The miniaturized microfluidic biosensor offers continuous monitoring of different vasopressin levels with good potential for portability.

**Biography:** Dr. Peng He is currently assistant professor in chemistry in the Department of Chemistry and Physics at The University of Arkansas at Pine Bluff. Dr. He has research interests in polymerization-based biosensors for early screening and diagnosis of human diseases, polymeric barcoding, biosensing devices for space health assessment, and phospholipid-nanomaterial bioconjugates. Dr. He received his Ph.D. degree in Chemistry from North Carolina State University; Master of Science degree in Polymer Science from School of Polymers and High Performance Materials at The University of Southern Mississippi; and a Bachelor of Engineering degree in Applied Chemistry from the School of Chemistry and Chemical Engineering at Shanghai Jiao Tong University, Shanghai, China. Dr. He worked as postdoctoral associate for electrochemical biosensors in microfluidics for rapid molecular diagnostics and battlefield health assessment and treatment in Biological Engineering and Mechanical Engineering Departments at Cornell University. He also worked as scientist and project leader to support P&G Chemicals and Fabric & Home Care Business R&D at The Procter & Gamble Company.

For further information please click link below:  
<http://mse.ucf.edu/>

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**Monday  
February 27, 2017**

**3:00PM – 4:00PM**

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