Department of Biomedical Engineering
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Gold nanoparticles and aptamers: from biosensors to drug delivery

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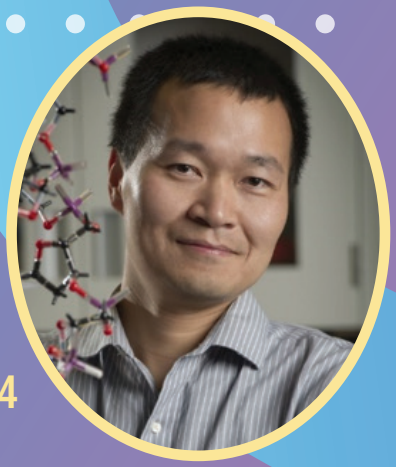

Date: 30 May 2024
Time: 11:00 am
Venue: Peter Ho Lecture Theature (LT-10)
Yeung Kin Man Academic Building

Abstract

Interfacing DNA with gold nanoparticles (AuNPs) has produced a diverse range of biosensors, imaging agents, drug delivery systems, and new materials. AuNPs are particularly attractive because of their low toxicity and unique optical, electric and catalytic properties. We performed fundamental adsorption studies leading to new methods of attachment of DNA to AuNPs by low pH and freezing. In addition, we studied aptamer-based sensors using AuNPs for signal production and revealed some potential artifacts. In the second part of the talk, our recent work on selection of DNA aptamers will be presented including lactate sensing and ocular drug delicery.

Biography

Juewen Liu received his Bachelor's degree from the University of Science & Technology of China in 2000 and Ph.D. from the University of Illinois at Urbana-Champaign in 2005. He joined the University of Waterloo in 2009 and is currently a professor of chemistry. He is interested in aptamers and biosensors. He received a Fred Beamish Award (2014) and a McBryde Medal (2018) from the Canadian Society for Chemistry for his contribution in bioanalytical chemistry. He serves as a Section Editor for Biosensors & Bioelectronics, and a Contributing Editor for TrAC Trends in Analytical Chemistry. He has published over 500 papers, receiving over 40,000 citations with an H-index of 104, and is a Clarivate Highly Cited Researcher in 2022 and 2023.