



The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Prof. Yong Zeng
Department of Chemistry
The University of Kansas

Title: Bioanalytical Microfluidics: Applications towards
Precision Disease Diagnosis

<< Abstract >>

We are entering the era of precision medicine where personal molecular characteristics are used to design and tailor diagnostic, prognostic and therapeutic strategies. Progress towards precision treatment of diseases, such as cancer, demands better biomarkers and assays to measure risk, diagnose disease, and predict patient prognosis and therapy response. Microfluidics offer an enabling platform for leveraging quantitative and systems analysis of molecules and cells.

This presentation will discuss the development of different microfluidic systems for sensitive and quantitative molecular analysis and their applications to clinical diagnosis of cancer. The first part of the talk will be focused on microfluidic engineering of bioaffinity assays on the pico- to femtoliter scales to substantially improve the quantitative detection and glycan profiling of protein biomarkers associated with tumors. In the second part, I will discuss developing new nano-interfaced microfluidic systems to investigate circulating exosomes in patient plasma as liquid biopsy for non-invasive cancer diagnosis. We demonstrate that these new methods enables quantitative detection and molecular profiling of tumor-derived exosomes directly from minimally invasive amount of plasma samples with markedly improved detection sensitivity and speed. These findings would suggest the feasibility of translating these microfluidics-based bioassays into biomedical studies and clinical utilities.

Date: August 4, 2016 (Thursday)

Time: 11:00 a.m.

Venue: LG23, Science Centre



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Contact Person:
Prof. Bo Zheng



The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Prof. Ling Jiang
 Dalian Institute of Chemical Physics
 Chinese Academy of Sciences

Title: Spectroscopy and Dynamics of the Microhydrated Clusters

<< *Abstract* >>

How ions are solvated in solution has intrigued physical chemists since the development of the theory of electrolytic dissociation at the end of the nineteenth century. A molecular-level understanding of ion solvation is not only important for understanding biological and chemical processes in solution, but also plays an important role in understanding the surface speciation and reactivity of aerosols. Infrared photodissociation (IRPD) and photoelectron spectroscopy (PES) of mass-selected ions together with theoretical calculations allows for a detailed characterization of the influence of the stepwise solvation of an ion by adding one solvent molecule at a time. Here, we present the recent IRPD and PES studies on the microhydrated $\text{MgNO}_3^+(\text{H}_2\text{O})_{1-12}$,^[1,2] $\text{H}_2\text{PO}_4^-(\text{H}_2\text{O})_{1-12}$,^[3,4] and $\text{Ni}(\text{CO})_3(\text{H}_2\text{O})_n^-$.^[5]

REFERENCES

- [1] Jiang, L.; Wende, T.; Bergmann, R.; Meijer, G.; Asmis, K. R. *J. Am. Chem. Soc.* **2010**, *132*, 7398.
 [2] Jiang, L.; et al. Unpublished results.
 [3] Jiang, L.; Sun, S.; Heine, N.; Liu, J.; Yacovitch, T. I.; Wende, T.; Liu, Z. F.; Neumark, D. M.; Asmis, K. R. *Phys. Chem. Chem. Phys.* **2014**, *16*, 1314.
 [4] Sun, S.; Jiang, L.; Liu, J.; Heine, N.; Yacovitch, T. I.; Wende, T.; Asmis, K. R.; Neumark, D. M.; Liu, Z. F. *Phys. Chem. Chem. Phys.* **2015**, *17*, 25714.
 [5] Xie, H.; Zou, J.; Kong, X., Zhang, W.; Ahmed, M.; Jiang, L. **2016**, submitted.

Date: August 8, 2016 (Monday)

Time: 2:30 p.m.

Venue: L3, Science Centre



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Contact Person:
 Prof. Zhifeng Liu



The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Prof. Yoshito Tobe
Division of Frontier Materials Science
Graduate School of Engineering Sciences
Osaka University

Title: Non-Benzenoid Circulenes with Open-Shell
Character

Date: August 17, 2016 (Wednesday)

Time: 11:30 a.m.

Venue: L5
Science Centre

