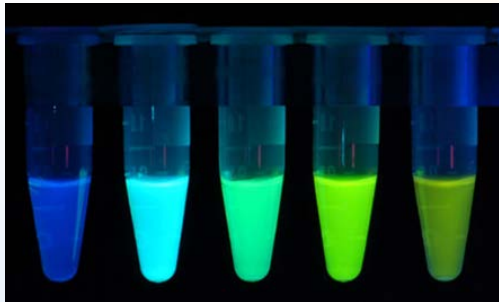


## Reaction-Based Fluorescent Probes for Sensitive Detection of Singlet Oxygen and Ethylene

By Dr. Sun Mingtai

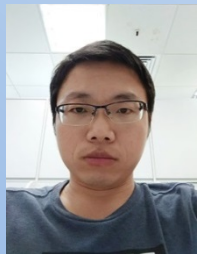


### Abstract

This presentation provides an overview on phase change in food systems. Fluorescence molecular probes have been extensively applied in biological and environmental applications due to their advantages for the real time and space detection with high sensitivity. The fluorescent probes can provide multiple signaling modes such as quenching, enhancement, excimer/exciplex formation, lifetime, and anisotropy for substrate analysis. Therefore, more efforts have been exerted on the synthesis of probes with new fluorescence spectral properties, especially organic molecule/complex-based fluorescent probes, since they exhibit exceptional advantages and can be easily functionalized to monitor intra- and extracellular events with high chemoselectivity and biocompatibility.

In this seminar, I would like to share our recent development on fluorescence technology: 1) reaction-based fluorescent probes for detection and imaging of singlet oxygen in living cells; and 2) novel fluorophore-tagged Grubbs catalyst as turn on fluorescent probes for sensitive detection and quantification of ethylene released from ripening fruits.

### About the Speaker



Sun Mingtai conducted his doctor studies in organic chemistry at Jilin University. He has been currently a research fellow at National University of Singapore since 2016. He was an associate professor position at Institute of Intelligent Machines, Chinese Academy of Sciences. His research is focused on the design and synthesis of organic fluorescent molecules for biological reactive oxygen species detection.

## A Smartphone-based Portable Analytical System for On-site Quantification of Hypochlorite and Its Scavenging Capacity of Flavonoids

By Mr. Yang Xin



### Abstract

A high-throughput smartphone-based colorimetric reader (HSCR) was developed to quantitatively detect hypochlorite and determine hypochlorite scavenging capacity of flavonoids in high-throughput format by a blue probe DMMA-IR780, which changes from deep blue (B) to red (R) upon selective epoxidation by hypochlorite on one of the double bonds. The reaction mechanism between probe and hypochlorite was studied by mass spectrum and attributed to the formation and degradation of chlorohydrins. The color change was recorded by an app built on android smart phone for on-site determination and analysis. This portable system could quantify hypochlorite with wide linearity range of 3.42 to 218.75  $\mu\text{M}$  and limit of detection at 0.08  $\mu\text{M}$ . Taking advantages of smartphone and the probe DMMA-IR780, our method provides a cost-effective and hand-held platform for on-site HOCl determination and quantification of hypochlorite scavenging capacity of dietary antioxidants.

### About the Speaker



Mr Xin Yang joined National University of Singapore as a Ph.D candidate in 2016, with a current research focus on the structure and activity relationship of antioxidants. He holds a bachelor's degree in food science and engineering from Northwest A&F University.

**Host:** Dr. Huang Dejian **Date:** 6<sup>th</sup> Mar, 2018  
**Time:** 12 to 1 pm **Venue:** Seminar Room S14-06-20

ALL ARE WELCOME !