

## Introductory Talks by New Researchers @ BioSym

10 Oct 2016 – 19 Dec 2016

### Luminescent and stretchable hydrogel with lanthanide crosslinking

Dr. Zhu Qingdi

Date: 31<sup>st</sup> October 2016, Monday

Time: 12 pm to 1 pm

Venue: Perseverance Room, Enterprise Level 5



#### **Abstract**

Luminescent hydrogels have found their wide applications in sensing and imaging. In this project, we aim to develop robust hydrogels with strong luminescence and responsiveness to multiple stimuli (chemical, thermal and mechanical, etc.). In the preliminary study, we incorporated lanthanide ions into a polyacrylamide-poly(acrylic acid) hybrid gel to form a luminescent stretchable hydrogel network. The luminescence of the hydrogel can be greatly enhanced with the addition of terpyridine as the antenna molecule. Moreover, tensile tests showed that the gel can be stretched by as much as 20 times and the hysteresis tests as well as the lifetime measurement proves that the lanthanide ions act not only as a luminescent dope but also as crosslinkers to strengthen the gel network. Lastly, with the incorporation of luminescent carbon dots into the hydrogel, an unique white luminescent hydrogel was fabricated and energy transfer from lanthanide ions to the carbon dots was observed.

#### **Short Biography**

Qingdi joined SMART-BioSym in August 2015 as a postdoc in Krystyn's group. He got his doctoral degree from Department of Biomedical Engineering, NUS and was working as a postdoc in the Department of Chemical and Biomolecular Engineering, NUS, before joining SMART. His research interests include biosensors, biochips, microfluidics, soft materials and luminescent materials. His current study in SMART focuses mainly on the development of novel stretchable and luminescent hydrogel with optical response to multiple stimuli.