Department of **Materials Science & Engineering** seminar series 2019

Presents

Transition metal based compounds for efficient water splitting: from substrate materials to active species

by *Wang Ling*

Date: 30 May 2019 (Thursday)
Time: 10am to 1pm
Venue: EA-02-14

Abstract

Water splitting to produce hydrogen and oxygen has been considered as one of the most promising methods to produce renewable energy resources. However, the kinetic hindrances make the practical potential needed for water splitting far from the ideal potential under standard conditions. Developing highly efficient and stable electrocatalysts are of great importance. Despite intensive research efforts have been devoted to investigating efficient water splitting electrocatalysts, there still exists quite a number of challenges towards efficient electrocatalysts with excellent activity and stability, and some issues still need to be further investigated.

In this work, the water splitting electrocatalysts are investigated based on the transition metal-based compounds from both substrate materials and active species. We fabricated efficient substrate materials for water splitting, and investigated the bubble release behavior on the electrode surface and inside the pore structure. Besides, we also proposed a facile strategy to improve the catalytic activity of transition metal phosphide for hydrogen evolution reaction (HER), as well as the reaction mechanism of the enhanced activity. Lastly, an excellent oxygen evolution reaction (OER) electrocatalyst is obtained by electrochemical oxidation of transition metal selenides. The reaction mechanism and *in situ* evolution of $NiSe_2$ during OER are further studied.

Speaker *Wang Ling*

Biography

Wang Ling graduated from South China University of Technology and got her master degree in Chemical Engineering in 2015. She joint Assoc. Prof. Xue Junmin's research group as a PhD candidate since January 2015. Her research interests include design, synthesis, and application of water splitting electrocatalysts.

ALL ARE WELCOME!

A/Prof Wang Qing Host