Finding new Solid-state Materials from the Viewpoint of Chemistry

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Venue: w563, Physics building, Peking University

地点：北京大学物理楼，西563会议室

Abstract

I will describe our studies of using chemical principles to design and synthesize new solid-state materials with various properties. First, I will present search for new superconductors with critical charge-transfer pairs. Combining this idea with functional fragmental formulization, we discovered several new compounds including one new superconductor. Second, I will describe how to use the electron counts to predict the topological superconducting candidates. In the end, I will describe other projects we are working on, including “interplay between superconductivity and ferromagnetism”, “micro-defects controlling the macro-shapes in crystal growth”, and “highly-performed heterogeneous intermetallic catalysis”.

About the Speaker

Weiwei Xie was born in Jiangsu, China in 1988. She obtained her Bachelor degree from Chemistry College, Nankai University in 2010 with the major in Organic Chemistry. After that, she conducted her Ph.D. thesis research with Prof. Gordon J. Miller at Iowa State University, Ames Laboratory. Her Ph.D. work focused on the fundamental structure-stability relationship in intermetallics mainly using single crystal X-ray diffraction and first-principles simulation. During her Ph.D. period, she held Frank J. Moore and Thoreen Beth Moore Fellowship and graduated with Research Excellence in 2014. Following a postdoctoral study with Prof. Robert Cava at Princeton from 2014 to 2016, she started her research journey to exploring new superconductors as a solid state chemist. In 2016, she joined the Department of Chemistry, Louisiana State University as an assistant professor. Her research group incorporates chemistry and physics to discover new energy-related materials such as new superconductors, heterogeneous catalysis, topological materials, and so on.