



## Photonics Forum

March 28, 2018

11:45 a.m. -  
1:15 p.m.

9th Floor

Room 901

Photonics Center

8 Saint Mary's Street

*Lunch will be served!*



## Professor Xi Ling, Boston University

### Light-matter Interaction in Two-dimensional Van der Waals Structures

Atomically thin two-dimensional (2D) materials, due to its ultra-flexible nature and diverse properties covering from metal (e.g. graphene), to semiconductor (e.g. MoS<sub>2</sub> and black phosphorus) to insulator (e.g. hexagonal boron nitride), have been considered promising candidates for future electronic and optoelectronic devices. Spectroscopic methods which are based on the light-matter interaction, provide a powerful probe to investigate the structure, properties and behaviors of physical particles (e.g. electron, exciton and phonon) in 2D materials and their hybrid structures. In this talk, Professor Ling will discuss the emission properties of semiconducting MoS<sub>2</sub> monolayer and its twisted bilayers. Then, she will introduce the use of Raman spectroscopy to study a new member of semiconducting 2D material--black phosphorus, where properties strongly depend on the thickness and crystalline orientation. Finally, she will demonstrate that 2D materials are also useful for the development of spectroscopy techniques.

Xi Ling was born in Gao'an, Jiangxi Province, P.R. China in 1986. She obtained a B.S. degree in Chemistry from Lanzhou University in 2007. She earned a Ph.D. in Physical Chemistry at Peking University under the guidance of Jin Zhang and Zhongfan Liu in 2012, where she discovered the graphene-enhanced Raman scattering effect. Following her doctoral work, she was a postdoctoral associate with Mildred Dresselhaus at Massachusetts Institute of Technology (MIT), where she worked on the spectroscopic study of two-dimensional (2D) materials and chemical vapor deposition of 2D materials. Ling has co-authored 45 peer-reviewed publications, two patent applications, and one book chapter. Her work has been recognized through the reception of awards including Boston University's Provost Career Development Professorship in 2017 and Materials Science and Engineering Innovation award, and the EECS rising star from MIT. She joined Boston University as an Assistant Professor of Chemistry and Materials Science & Engineering in 2016. She is a member of the BU Photonics Center.



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