

### Séminaire

Le vendredi 12 janvier 2018, 15h30  
Des rafraîchissements seront servis dès 15h  
Complexe de recherche avancée, pièce 233  
Université d'Ottawa, 25, rue Templeton  
\*Le séminaire se déroulera en anglais.\*

### Seminar

Friday, January 12, 2018, 3:30 p.m.  
Refreshments to be served starting at 3 p.m  
Advanced Research Complex, room 233  
University of Ottawa, 25 Templeton Street

## Unraveling Kinetics at the Nanoscale: Defect Engineering of Thin Film Solar Absorbers Mariana Bertoni, Arizona State University

**Abstract:** High conversion efficiency and long device lifetimes require exercising nanoscale control over the material's microstructure and composition as well as transport across device interfaces throughout multiple length scales. For decades we have focused on pushing technique's resolution close to the physical limits, almost to the point where it has become commoditized. While high resolution is necessary to develop emerging energy materials, multimodality sensing and functionality are univocally more valuable. This presentation will cover recent results in the polycrystalline  $\text{CuInGaSe}_2$  system and show that the key lies in the multimodal evaluation of the device under operating conditions and the kinetics that govern compositional inhomogeneities. Integrating and synthesizing correlative information is something our brain performs seamlessly every second of the day from information gathered by our senses from our "operating" environment. In the field of energy conversion technology the confluence of state-of-the-art characterization approaches and advanced computing will enable us to emulate this highly efficient process at unimaginable speeds, thus allowing us to design next generation materials and devices.

**Bio:** Mariana Bertoni received her PhD from Northwestern University in 2007 in Materials Science and Engineering with a minor in Chemistry. She joined Arizona State University as an Assistant Professor in 2012. Prior to this, she held senior scientist positions at two emerging start-up firms in the photovoltaic industry and a visiting scientist appointment at the Massachusetts Institute of Technology (2010-2012). Her previous postgraduate experience includes a postdoctoral appointment at the Massachusetts Institute of Technology (2008-2010), a Marie Curie postdoctoral fellowship at Creavis Technologies & Innovation in Germany (2007-2008) and a visiting researcher appointment at the National Renewable Energy Laboratory. She has published over 60 research articles in peer-reviewed journals, and presented more than 120 papers at scientific meetings. She has received multiple awards and recognitions, including most recently selection to the National Academy of Engineering 2017 US Frontiers of Engineering and Arizona State University's 2016 Outstanding Assistant Professor. She currently serves at the Advanced Photon Source MBA upgrade user board and is active in various committees and chairing positions at the IEEE photovoltaic specialists conferences.



**TOP-SET** est un programme de formation FONCER du CRSNG en puissance optoélectronique ayant pour but de façonner une cohorte de personnel hautement qualifié détenant des connaissances approfondies en systèmes optoélectroniques pour rejoindre les rangs d'équipes de recherche et développement.

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