NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Materials Science and Engineering

Seminar Topic:
Achieving Enhanced Thermoelectric Performance in Multi-Phase Materials

Professor Alex Yan Qingyu

Abstract

Thermoelectric materials are capable of direct solid state conversion of heat to electricity without moving parts or emitting gas. In addition, they show great potential for increasing energy utilization efficiency and reducing greenhouse gas emission. Controlling the charge carrier concentration, lattice defects and electronic band structures are very important in enhancing the thermoelectric properties of materials. This can be achieved in a multi-phased material system. We will show some examples of enhancing and optimizing the performance of PbX (X= S, Se, Te) based thermoelectric materials by incorporation with other phases. We will also discuss some work on controlling the crystal orientation of polycrystalline $SnSe_2$ samples to improve charge transport behaviour to optimize its thermoelectric properties.

Biography

Dr Alex Yan Qingyu is currently a Professor in the School of Materials Science and Engineering at Nanyang Technology University, Singapore. He obtained his BS in Materials Science and Engineering at Nanjing University and finished his PhD in the Materials Science and Engineering Department at the State University of New York at Stony Brook. He joined the Materials Science and Engineering Department at Rensselaer Polytechnic Institute as a postdoctoral research associate after graduation. Dr Yan joined the School of Materials Science and Engineering at NTU as an Assistant Professor in 2008 and became an Associate Professor in 2013.

He is currently the Chair of the Electrochemical Society, Singapore Section. He is also a Fellow of the Royal Society of Chemistry since 2018. In addition, he has been a board member of Materials Research Express (IOP Journal) since 2016. Dr Yan has published more than 280 papers (with total citation of >16,500 and h-index of 66) on 2 research areas – (1) thermoelectric materials, and (2) electrochemical properties of materials for energy storage or conversion.

Wednesday, 10 October 2018 ǁ Time: 2:00 pm – 3:00 pm
Venue: MSE Meeting Room (N4.1-01-28)
Hosted by: Professor Zhao Yanli

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