Sriram Ravindren

Intel Corporation, Hillsboro, OR
Ph.D., University of Cincinnati, 2015

Sriram Ravindren graduated from the University of Cincinnati in May, 2015 with a Ph.D. in Electrical Engineering under the supervision of Dr. Punit Boolchand. He joined the University of Cincinnati in 2010. Dr. Ravindren's dissertation, titled

'New insights into the glass structure and melt dynamics of Ge-As-Se alloys: topological phases, eutectic effects, slow homogenization of melts and nanoscale phase separation effects',

expanded our understanding of the structure-property relationships and relaxation mechanisms of binary and ternary chalcogenide alloys. It was the first work to properly resolve the overlapping Raman vibrational modes of the As-Se binary alloy across a wide compositional space. This resolution made it possible to map the distribution of the ethylene-like structures and – for the first time - the notoriously evasive Quasi-tetrahedral structures.

Under the supervision of Dr. Punit Boolchand, Dr. Ravindren and the team at his lab provided the first detailed description of the slow homogenization of high temperature As-Se melts, following **pioneering** early work in the Ge-Se and Ge-S melts by other members of the team. Uniquely, Dr. Ravindren's work was the first to describe the effect that the composition of a system's eutectic had on the rigidity transition, and thus the sharpness, of the As-Se system's topological phase boundaries. This new relaxation mode in which structures of clusters of As-Se macro-molecules near the eutectic evolve with time, overwhelms the relaxation mechanisms governed by the underlying inter-molecular connectivity of these systems. This disrupts the isostatic behavior of the Boolchand Intermediate Phase compositions nearby, and proceeds to progressively distort the topological phase boundary of the As-Se (and P-Se) systems. Other systems where the eutectic and the IP windows are separated considerably, have sharp, easily observable rigidity windows.

His work on the Ge-As-Se ternary systems revealed that the interatomic connectivity of these systems is influenced heavily by the 4-fold As atoms, even where the Ge concentration is several times higher than the As atom. This influence of the - otherwise evasive - 4-fold As atoms is evident through direct observations of the glass transition temperature curves for these systems. Dr. Ravindren's work employed a range of techniques at the SSPM lab, including the Modulated Differential Scanning Calorimetry (MDSC), FT-Raman spectroscopy and Mossbauer spectroscopy.

Dr. Ravindren is currently a Yield Engineer at Intel Corporation's main technology development site in Hillsboro, OR, working on Intel's latest production-ready semiconductor processors.

Prior to joining the University of Cincinnati, Dr. Ravindren obtained his Masters degree in Electrical Engineering from Clemson University, SC and his Bachelors degree in Electronics and Communications Engineering from Anna University in Chennai, India. He is originally from Trivandrum, Kerala – a state in the southern part of India.