VISKANTA LECTURE SERIES

LOW-TEMPERATURE, NON-EQUILIBRIUM PLASMAS: FROM COOLING ELECTRONICS TO ENABLING MORE RESILIENT GOODS PRODUCTION

WEDNESDAY, APRIL 16TH
10:00AM-11:30AM, POTR 234

DAVID GO

BIO: David B. Go is the Viola D. Hank Professor of Aerospace and Mechanical Engineering and Vice President & Associate Provost for Academic Strategy at the University of Notre Dame. Prior to his current role, he was the Chair of the Department of Aerospace and Mechanical Engineering. Professor Go has published widely in the areas of plasma science and engineering, heat transfer and fluid dynamics, and chemical analysis and holds six patents and several more patent applications, leading to two licensed technologies. Professor Go has been recognized with the Air Force Office of Scientific Research Young Investigator Research Award, the National Science Foundation CAREER award, the Electrochemistry Society Toyota Young Investigator Fellowship, the Electrostatics Society of America Rising Star and Distinguished Service Awards, and the IEEE Nuclear & Plasma Sciences Society Early Achievement Award. He is an ASME Fellow, Senior Member of IEEE, and former President of the Electrostatics Society of America. Most recently, he was honored with the Outstanding Mechanical Engineer Award from Purdue University. At Notre Dame, he has received the Rev. Edmund P. Joyce, C.S.C. Award for Excellence in Undergraduate Teaching and was a Kaneb Center for Teaching and Learning Faculty Fellow. Prior to joining Notre Dame in 2008, Professor Go received his B.S. in mechanical engineering from the University of Notre Dame, M.S. in aerospace engineering from the University of Cincinnati, and Ph.D. degree in mechanical engineering from Purdue University.

ABSTRACT: Plasmas are one of the unsung heroes of modern science and engineering. In addition to being used for important scientific discoveries throughout history – such as the discovery of argon – one class of plasmas, called low-temperature, non-equilibrium, have also formed the backbone of many technologies that sustain the modern world, from microelectronics to lighting. Recently, a number of advances have shown that the non-equilibrium environment in the plasma is well-suited to overcoming challenges across a wide variety of domains, leading to a number of emerging areas where plasma engineering is well-posed to make important contributions over the next several decades. In this talk, I will cover my journey with plasmas, starting with using them for cooling small form-factor electronics to most recently integrating them into emerging printing technologies. I will discuss several stops on this journey that allowed me to explore new physics and try new applications, ranging from scaling plasma devices down to just microns in dimensions to using plasmas to drive liquid-phase chemistry. I will overview how collaborative research, using different experimental, computational, and theoretical techniques, has enabled me to advance the field and realize practical technologies.

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