

INVITED SPEAKER TALK

IN ELECTRICAL AND COMPUTER ENGINEERING

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The Department of Electrical and Computer Engineering, Concordia University, and IEEE Montreal Section/EDS chapter.

Tuesday, April 24, 2018

3:00 p.m. – 6:00 p.m.

Room EV003.309

1515 St. Catherine, West

“Smart Power Devices and ICs with Wide and Extreme Bandgap Semiconductors.”



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PROFESSOR

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ABSTRACT

Silicon has long been the dominant, often exclusive, semiconductor of choice for high voltage power devices and ICs. Over the last decade, power switching devices made of two wide bandgap (WBG) semiconductors, SiC and GaN are impacting power electronics systems with their commercial availability and performance improvement, and hence less power and more energy efficient, over conventional counterparts. In this talk, the present status of the research, development and/or commercialization, as well as cost-effectiveness of smart power devices and ICs using wide (SiC, GaN) and extreme (Ga2O3, diamond, AlN) bandgap semiconductors in advanced energy efficient electronics systems is presented. The technology obstacles and needs faced in these semiconductors as well as future trend in these power devices and ICs are also discussed.

BIOGRAPHY

From 1977-1989, Dr. Chow worked at General Electric Corporate Research and Development, Schenectady, NY. In the first two years, he was involved with developing CVD processes and characterization of doped tin oxide and indium oxide thin films for transparent electrode applications in solid-state imagers. From 1979-1982, his work on refractory metals and metal silicides included the deposition and plasma etching of these films as well as their incorporation into integrated-circuit processes and performance characterization of test devices and logic circuits. From 1982 to 1989, he participated in the design and process development of various discrete and integrable MOS-gated unipolar and bipolar devices (such as the MOSFET, IGBT and MCT). Also, he was involved with process architecture and integration of high-voltage power integrated circuits. Since 1989, he has been in the faculty of the Electrical, Systems and Computer Engineering Department of Rensselaer Polytechnic Institute, Troy, NY, where he is now a Professor

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