



San Antonio Nano Technology Forum

Title: Advancing Emerging Nonvolatile Memory with Carbon Nanomaterials

Speaker: Prof. Chiyui (Ethan) Ahn, Assistant Professor of Electrical and Computer Engineering, The University of Texas at San Antonio (UTSA)

Venue: BSE Multipurpose Room (2.102), One UTSA Circle, San Antonio, TX 78249.

Date: **Wednesday, February 21, 2018**

Time: **11.30 AM – 12.45 PM**

FREE MEETING WITH PIZZA AND SOFT DRINKS/WATER **



Abstract:

With the advent of so-called ‘abundant data’ era and the required throughput and energy-efficiency for the next-generation computing paradigm, it becomes increasingly important to explore more scalable approaches for both computational (logic) and information storage (memory) devices. This is important, as the energy efficiency of computing circuits/systems has been increasingly limited by the memory and storage devices. In this seminar, a frontier research on the near- and long- term potential of emerging nanoscale non-volatile memories (NVMs) will be discussed to replace today’s ultimately scaled CMOS memories. The novel 1TnR (one-transistor-n-resistors) x-point memory array with carbon nanotube field-effect transistor as one-dimensional selection device and thus reduced sneak leakage is demonstrated as a cost-effective and 3D-stackable solution for the next-generation NVM architecture. It is also pointed out that the atomically thin graphene can be integrated with phase-change memory to improve the thermal efficiency of the NVM cell. Key challenges in integrating nanoscale materials to build up novel nano-devices (systems) will be addressed, and future perspectives on certain on-going research projects in the UTSA Nanoelectronics Laboratory (including spin-neuromorphic computing, epitaxial thin film oxides, energy harvesting) will be provided in the talk.

Biography of the Speaker: Dr. Ahn is currently an Assistant Professor of Electrical Engineering and a founder and a principal investigator of the Nanoelectronics Laboratory at The University of Texas at San Antonio. Previously he served as a Sr. Process Engineer at Apple, Inc. (Cupertino, CA) and as a post-doctoral researcher at Stanford University. He received his Ph.D. in EE at Stanford University in 2015, under the supervision of Professor H.-S. Philip Wong. He joined Stanford in 2010, after a 3-year research career on the STT-MRAM technology with the KIST in Seoul, Korea. He received the B.S. and M.S. degrees in EE from the KAIST in Daejeon, Korea, in 2005 and 2007, respectively. He is the author of over 40 peer-reviewed research journal and conference papers and wrote one book chapter. His primary research interests include energy-efficient nanoscale logic and memory devices, low-dimensional nano-materials, electronic/thermal/magnetic transport in nanoscale devices, and novel devices in beyond-CMOS domain. Dr. Ahn has been the recipient of numerous awards and honors, including John Bardeen Research Award for Excellence in Nanodevice Research in 2014. He is currently serving as an ECE concentration chair for Electronic Materials and Devices at UTSA, and a technical committee member for IEEE Electron Devices Society (EDS) optoelectronic devices.

Please RSVP to: info@santf.net. Please send your RSVPs by 2 PM on Tuesday, February 20. Please check our website (www.santf.net) for complete program details and upcoming meeting schedule.