

Solid State Technology and Devices Seminar

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Electronics and Spintronics in 2D Materials

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Abstract: 2D materials such as graphene and transition metal dichalcogenides have opened up avenues in mechanically flexible circuits for IoT applications, and low power, beyond-CMOS device concepts. We will discuss processing challenges such as growth and doping of these materials. We will also discuss our work involving 2D-2D tunneling in these materials, leading to transistors with negative differential resistance. Other 2D materials such as topological insulators and transition metal oxides have applications in spintronics. They can be used for beyond-CMOS, non-volatile low power logic and memory devices.

Bio: Dr. Sanjay Banerjee is the Cockrell Chair Professor of Electrical and Computer Engineering and Director, Microelectronics Research Center, at the University of Texas at Austin. He has over 1000 archival refereed publications/talks, 10 books/chapters, and 35 U.S. patents. He has received the SIA/SRC University Researcher Award (2017), IEEE Grove Award (2014), ECS Callinan Award (2003), and is a Fellow of IEEE, APS and AAAS. He is active in beyond-CMOS logic and memory devices, and fabrication and modeling of advanced MOSFETs.