

## UCSB Joins Hands with Leading Asian Institute to Develop Green Electronics

*Singapore and Santa Barbara, California, October 12/13, 2009* - UC Santa Barbara and the [Institute of Microelectronics \(IME\) of Singapore](#) have entered into a "green electronics" research collaboration agreement focused on developing ultra-efficient nanoscale transistors and exploring their circuit-level functionality. The collaboration will be led by [Dr. Kaustav Banerjee](#), professor of electrical and computer engineering and an affiliated faculty member of the [Institute for Energy Efficiency \(IEE\) at UCSB](#), and by Dr. Navab Singh at IME.

This latest agreement reflects the global involvement of UCSB's IEE. It falls specifically within the Institute's [Electronics and Photonics solutions group](#), one of six key research areas for IEE.

More specifically, the collaborative research targets design, modeling, fabrication, and characterization of an emerging category of "green" nanoscale devices with ultra-low power leakage-also known as "sub-kT/q" devices.

According to Professor Banerjee, achieving energy-efficiency by lowering leakage power consumption is of critical importance in all future electronic products, and particularly in portable electronic devices, in which increasing energy efficiency means increasing battery life. The UCSB-IME collaborative research aims to address this issue at the most fundamental level, by creating novel electronic devices whose switching behavior is near-ideal, that is, they can move from ON to OFF state and vice-versa almost instantly.

"We will be exploring new materials, transistor structures, fabrication techniques, circuits, and architectures to achieve these goals," added Dr. Singh of IME.

Banerjee's [Nanoelectronics Research Lab at UCSB](#) is renowned for modeling, simulation and design of nanometer scale devices, interconnects, and circuits. The Institute of Microelectronics in Singapore is a leading research institute in the fabrication of advanced device structures "We expect that the synergies in this collaboration will yield exciting discoveries that will have significant implications for the worldwide semiconductor and electronics industries," added Dr. Patrick Lo Guo-Qiang, Director of the Nano Electronics and Photonics programs at IME.

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### About the College of Engineering at UC Santa Barbara

The College of Engineering at UC Santa Barbara is a global leader in bioengineering, chemical and computational engineering, materials science, nanotechnology and physics. UCSB boasts five Nobel Laureates (four in sciences and engineering) and one winner of the prestigious international Millennium Technology Prize. Our students, faculty, and staff thrive in a uniquely-successful interdisciplinary and entrepreneurial culture. Our professors' research is among the most cited by their peers, evidence of the significance and relevance of their work.

## **About the Institute of Microelectronics (IME)**

The Institute of Microelectronics (IME) is a research institute of the Science and Engineering Research Council of the Agency for Science, Technology and Research (A\*STAR). Positioned to bridge the R&D between academia and industry, IME's mission is to add value to Singapore's semiconductor industry by developing strategic competencies, innovative technologies and intellectual property; enabling enterprises to be technologically competitive; and cultivating a technology talent pool to inject new knowledge to the industry. Its key research areas are in integrated circuits design, advanced packaging, bioelectronics and medical devices, MEMS, nanoelectronics, and photonics. For more information about A\*STAR, please visit <http://www.a-star.edu.sg>.

## **Related Links**

[Kaustav Banerjee](#)

[UCSB Institute for Energy Efficiency](#)

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