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Biography:

Kaustav Banerjee is one of the world's leading researchers of nanoelectronics. At present, he is a professor of Electrical and Computer Engineering and director of the Nanoelectronics Research Lab at UC Santa Barbara. His current research is focused on the physics, technology, and applications of low-dimensional nanomaterials such as graphene and other 2D materials for next-generation green electronics, photonics, and bioelectronics. Initially trained as a physicist, he graduated from UC Berkeley with a PhD in electrical engineering (minors in physics and materials science) in 1999, working with Professor Chenming Hu.

Professor Banerjee has made seminal contributions toward extending the frontiers of energy-efficient electronics by identifying unique solutions that traverse diverse disciplines, ranging from nanomaterials and low-dimensional physics to novel devices, circuits, and chip-design methods and architectures. His ideas and inventions have played a decisive role in steering worldwide research and development efforts with remarkable societal and economic implications. In 2015, the Institute of Electrical and Electronics Engineers (IEEE) described him as "one of the key visionaries behind three-dimensional (3D) IC technology being employed by the semiconductor industry for continued scaling and integration beyond Moore's law, as well as the pioneer behind thermal-aware design methods and tools used in the IC design industry …", and recognized his contributions with a *Technical Field Award* – *The Kiyo Tomiyasu Award*, one of the institute's highest honors.

Professor Banerjee's research group has also spearheaded the use of nanomaterials for overcoming power dissipation and other fundamental challenges in nanoscale transistors, interconnects, and sensors. This includes the demonstration of world's thinnest channel tunnelling transistor that switches at 0.1V, leading to over 90% reduction in power consumption (*Nature* 2015). They have also introduced a novel energy-efficient interconnect material based on graphene that overcomes the fundamental limitations of conventional interconnect materials (*Nano Letters* 2016).

Professor Banerjee's research is chronicled in over 300 papers in professional journals, including many high-impact journals such as *Nature, Nature Materials, Nature Nanotechnology, Nano Letters, ACS Nano, Physical Review X, and Proceedings of IEEE*; as well as highly selective international conferences, including *IEDM, ISSCC, VLSI Symposium, DAC, ICCAD and IRPS*. Professor Banerjee is a *Distinguished Lecturer* of the *IEEE Electron Devices Society* since 2008. He has delivered over 200 keynote/plenary lectures, panel talks, tutorials, and invited talks at numerous international conferences and leading venues around the world. Professor Banerjee's highly cited works have been highlighted in numerous scientific and popular news media, including *Nature News & Views, Nature Nanotechnology Research Highlights, Physics Today, IEEE Spectrum, EE Times, Science Daily, R&D Magazine, Physics World, National Radio, NSF, NAE, Japan's NEDO, and The Economist.*

Professor Banerjee is an elected Fellow of IEEE, the American Physical Society (APS) and the American Association for the Advancement of Science (AAAS). His ideas and innovations have been recognized with numerous other accolades, including the prestigious *Bessel Prize*, presented to him in 2011 by the *Humboldt Foundation*, Germany, for his outstanding contributions to nanoelectronics, and a *JSPS Invitation Fellowship* from the *Japan Society for the Promotion of Science* in 2013, for his research on 2D materials and devices.