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Biography: Jimmy Xu is Professor of Engineering and Professor of Physics at Brown University, and conducts research in nano, molecular and optical sciences and engineering. Prior to moving to Brown in 1999, he was Director of the Nortel Institute for Telecommunications and held two endowed chair professorships at the University of Toronto. He has received six international and national prizes and awards for his research accomplishments, including the 1995 Steacie Prize of Canada. He was editor of IEEE Transactions on Electron Devices, and chaired a number of conferences and committees. He currently serves on the Advisory Boards of several companies and IOP's J. of Phys. D, and that of the IMS of National Research Council of Canada. He was a Distinguished Visiting Scientist of NASA Jet Propulsion Laboratory, and Distinguished Visiting Professor of POSTECH, Korea.. He has published ~300 refereed papers in refereed journals and conferences, been granted 16 patents, and given over 150 invited talks. He is most proud of his former and current students' accomplishments, twelve of whom won international, national and university prizes and medals for their thesis works.

Title: "Nanoelectronic: Evolution from CMOS to Nanotubes, DNAs and Protein"

Abstract : Taking a provocative position, I submit that microelectronics is encountering fundamental difficulties and the difficulties are not in making smaller transistors, nor in making them with different or better materials. Taking another provocative position, I venture to offer that the much celebrated Information Technology is a narrow success for it so far has been confined to the narrow lane of information processing and transmission. Information Technology should and need to expand to the vast space on the left – acquiring information and that on the right – executing on information. That is where new opportunities are and where great returns will be. It is also where electronics will undergo a transformation from electron transport and storage to electro-mechanic-bio-chemical interactions. Examples from our own recent explorations with nanotubes, DNAs, redox proteins and their interactions for sensing and control will be presented in this context.