

Development of CMOS devices - past, present and future

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Abstract

Electronics started in early 1900's with the invention of vacuum tubes. This was a great technological revolution. Then, the next technological evolution started in early 1970's by the invention of microelectronics or integrated circuits composed of huge number of tiny MOSFETs with micro meter size. The performance and cost of the IC per function have unbelievably improved by the continuous miniaturization of the MOSFETs. Now, the microelectronics have evolved to the nanoelectronics and micro-nano-electronics is the base of smart society for today and near-future, which is characterized by internet, IoT, and AI. However, it is expected that the miniaturization will reach its limit within 10 years, because of several reasons. Then, what about the development of integrated circuits or integrated devices technologies after the end of miniaturization? Integrated circuits miniaturization technologies for logic and memory will diffuse and diverse to various kinds of devices such as power, photovoltaic, sensor, energy storage etc, in the coming IoT, 5/6G and AI era. In near future, many different kinds of devices will be integrated or connected on-chip, in package, or by wired/wireless networks, and will form integrated devices for smart system suitable for that era. The introduction of new materials will be more active as well as the miniaturization of the various kinds of devices



Biography:

Dr.Subash is an academic veteran, technocrat cum avid researcher. He is currently a Full time professor, Department of Electrical and Electronics Engineering & Dean, Academic & Research of Mangalam College of Engineering, Kottayam, Kerala. He is the active senior member of IEEE and Founding Chairman of IEEE Photonics Society Madras Chapter since September 2015.

He completed his Bachelor of Engineering in Electronics and Communication Engineering and Master of Engineering in Embedded System Technologies from Anna University, India in the year 2008 and 2011 respectively. He completed his PhD in Nanoelectronics from Anna University, Chennai in the year 2016. He enjoys teaching and research. He has 46 publications in International and National Journals and 28 papers in International and National Conferences in the area of Nanoelectronics, Nanoscale Device Modelling, Nanotechnology and Wireless Sensor Networks. He also filed 4 patents to his credit. He is the recognized research supervisor of Anna University, Chennai and APJ Abdul Kalam Technological University, Kerala. He serves as the active member of Editorial board/ reviewer board of various international Journals. Dr.Subash has been invited to deliver more than 30 keynote speeches and invited talks across the world. He has also been active in professional bodies.

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