Brief Bio - Sukomal Dey, born in Kolkata, India in Oct, 1982, received the B.Tech degree in Electronics and Communication Engineering from West Bengal University of Technology, Kolkata, India in 2006 and the M.Tech degree from the joint program in Mechatronics Engineering from the Indian Institute of Engineering, Science and Technology (IIEST), Shibpur, and Central Electronics Engineering Research Institute (CEERI), Pilani, India in 2009. He entered in the Ph.D. program at the Indian Institute of Technology, Delhi (IITD) as a full time student in Jan, 2010, submitted his thesis in July, 2015 and defended in 9th March, 2016. Since Aug, 2015 working in a collaborative research program with Synergy Microwave Corp., NJ, USA as a project scientist. He is author and co-author of more than 25 research papers, 2 book chapters, and filed 2 US patents. He is recipient of a best post graduate student award by Institute of Smart Structures and Systems, Bangalore (2012) and best student poster award titled; “RF MEMS Switches and Phase Shifters for Microwave Applications”, in Science Day Celebrations held at IIT Delhi, India, (2015). His research interests are radio frequency micromachined devices and related tunable circuits for microwave and millimeter-wave applications.

Abstract - When RF MEMS switches appeared more than 20 years ago, micromechanics has attracted huge attention for enabling near-ideal microwave devices. Since then, MEMS switches and MEMS switch based circuits went through different development stages and are currently proving themselves commercially, among others for mobile-phone antenna tuners. But micromachining can do much more than "just" MEMS switches for planar transmission line technology. Three dimensional micromachining allows also for new microwave devices with unprecedented performance, and has the potential to become an enabling technology for volume manufacturable microwave to millimeterwave systems. This talk gives an overview of silicon micromachining capability and examples of innovative microwave devices enabled by this technique and developed using simple surface micromachining technology, including switch and switching networks, tunable capacitors and inductors, X-K-Band digital phase shifters, reconfigurable digital phase shifters, tunable bandpass filters and antennas. Then, the state of the art of micromachined X-band single-pole-multi-throw (SPMT) switches for 4G/5G communications up to fourteen throw is given including high reliable Ka-band 4-bit phase shifters using two back to back SP16T switches. Finally, the potential of MEMS tuneable micromachined-resonator is outlined, given the examples of recent work at Synergy Microwave Corp; NJ, USA and IIT Delhi on the MEMS oscillator including lateral MEMS switching networks and band tunable phase shifter bank.