Title of the talk - FinFET based CMOS Technology for SoC applications: Challenges and Solutions from Analog Perspective

Abstract of the talk - System-on-chip (SoC) has been explored in the last few years for cost-effective integration of the digital core (logic and memory), analog core, sensors and high-voltage (HV) devices on a single substrate. The SoCs generally prefer CMOS technologies because of improved performance at lower production cost. Numerous mixed-signal SoC technologies with bulk MOS transistors are already available. The FinFETs replaced the bulk transistors for 22nm CMOS technology nodes and beyond. The FinFETs have been proven to have better gate electrostatics and higher performance. However for a good analog transistor, the attributes like intrinsic gain, device-to-device variability, linearity, frequency response are important. But, logic-oriented technology seldom focuses on all these attributes. In the last few years, in collaboration with IMEC, we have fabricated and measured the analog performance of FinFETs with different dimensions. In this talk, I will discuss our observations. The challenges arising due to technology scaling from analog perspective will be analysed based on detailed experimental measurements and extensive TCAD simulations.