

**Title of the Talk:** Design-oriented modeling of Thin Film Transistors (TFTs)

**Abstract:** Thin Film Transistors (TFTs) are essential devices in large area electronics, and in particular, in active-matrix crystal displays (AMLCDs). Their applications are expected to increase even more in the coming years due to the extension of the Internet of Things (IoT), facilitated by the growth of flexible, printed and stretchable electronics. Existing or potential applications of TFTs are active matrix reflective or emissive displays, imagers, radio-frequency identification, and wearable sensor systems. In addition, depending of the material of the active layer, some types of TFTs can be printed in biodegradable substrates, therefore enabling more sustainable technologies.

Accurate compact TFT modeling is a requirement for the design of circuits using TFTs. There are different types of TFTs, such as a-Si:H, polysilicon, nanocrystalline Si, organic, and oxide TFTs. Each type of material introduces specific physical properties and phenomena which affect the behavior of the TFT. We present models for the relevant physical effects in the different types of TFTs, addressing material and interface properties, electrostatic, and charge and heat transport. Finally, physically-based compact models suitable for circuit design. We also will target parameter extraction methods.