Special Session Proposal:

Title of Special Session:

Advances in high-k nanomaterials for various applications in electronic devices and circuits.

Objective of Special Session:

Today's era demands different applications of electronics in different way. So researchers apply various techniques to build novel electronic structures by applying different materials. High-k materials are such materials which can change the face of electronic industry. Researchers are utilising the high-k materials due to the dielectric thickness which can be increased at the same capacitance, thereby supressing the leakage current. Gate leakage in a modern transistor occurs through a process called "quantum mechanical tunnelling". It occurs when the gate dimension is so thin that the carriers have a certain statistical probability of being on the "downstream" side of the gate – without actually sloshing over the gate. So higher-k material remains desired for further enhancement.

The aim of this special session will be a quick start for researchers to find their problem which explains the application of higher-k dielectric materials and their developments. **Segment 1**. Need of High-K materials **Segment 2**: Previous literature and developments carried out and **Segment 3**: Application point of view for fabricating novel compound semiconductor devices like TFET, FinFET, GaaFET, Memories and other circuits.

Topics of the Special Session:

- Band Gap engineering by High-K materials
- Application of higher-k materials to devices like TFET, FinFET, GaaFET
- Post CMOS devices
- Advanced Logic and Memory Devices
- Flexible and Organic Electronics
- Computational Modelling at the Nanoscale
- Novel Devices reliability

Session Chair:

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