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Innovative Methods for Semiconductor Doping

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Message from the Guest Editors

Dear Colleagues,

Fin field-effect transistors have already become mainstream, but the technology still requests other vertical gate-all-around architecture advancements. The challenges in pursuing these objectives are the inability to obtain conformality through the conventional doping methods, the surface defect effects, the dopant activation, and the losses due to the parasitic resistances. In this perspective, new paradigms in alternative doping solutions have been developed.

The key topics of this special issue are reported as follows:

Different Substrates (Si, SiC, Ge, SiGe, InGaAs, GaP, organic materials...)

Doping Technologies and Processes: Ion Implantation, Plasma Doping, Molecular, Gas and Solid Doping

Annealing Technologies and Processes: Rapid Thermal Processing, Laser Annealing, Flash Annealing, SPE, Silicide, Contact and Dielectric Formation, Lattice Damage and Defect

Device Applications: CMOS, Memory, Power (SiC, GaN), RF-SOI, Image Sensors, IoT Devices, Photovoltaics, III-V Devices

Metrologies: Chemical, Physical and Electrical Characterization of 2D and 3D Structures

Modeling and Simulations (from ab-initio to TCAD) of all of the above.

Special Issue