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Editorial

Nano/Micro and Bio-Inspired Materials on Wide-Bandgap-Semiconductor-Based Optoelectronic/Power Devices

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This Special Issue on "Nano/Micro and Bio-Inspired Materials on Wide-Bandgap-Semiconductor-Based Optoelectronic/Power Devices" is a collection of 20 original articles dedicated to theoretical and experimental research works providing new insights and practical findings in the field of solid-state technology-related topics.

Nano/micro and bio-inspired materials in wide-bandgap-semiconductor-based techniques for developing optoelectronic and power devices have been increasing rapidly in this field. Investigations of the electrical, optical, structural, and morphological properties of wide-bandgap semiconductors have received enormous interest for future-generation devices. Many scientists and engineers are working within the domain using various methodologies.

The main intention of this Special Issue is to present a wide spectrum of nano/micro and bio-inspired materials on wide-bandgap-semiconductor-based optoelectronic/power devices, which were analyzed with various experimental procedures and simulation investigations on the electrical/structural/morphological characteristics, to show their practical significance in examining traditional, biomaterials and novel materials (i.e., nanometals and polymers). After collecting all of the papers, I am very happy to see that this great contribution of scientists/researchers/engineers all over the world (from 11 different countries) allowed the attainment of this goal. All of the papers can be divided into two groups, namely (i) "Device" and (ii) "Materials".

The first group of papers deals with device fabrication and experimental measurements. The following papers are related to devices:

- Electrochemical performance of 2D-hierarchical sheet-like $ZnCo_2O_4$ microstructures for supercapacitor applications (Prasad et al. [1]);
- Investigation of 1/f and Lorentzian noise in TMAH-treated normally-off GaN MISFETs (Im et al. [2]);
- Low-frequency noise behavior of AlGaN/GaN HEMTs with different Al compositions (Choi et al. [3]);
- Development of catalytic-CVD SiN_x passivation process for AlGaN/GaN-on-Si HEMTs (Kang et al. [4]);
- Effect of GaN buffer resistance on the device performance of AlGaN/GaN HEMTs (Im et al. [5]);
- Multifunctional hierarchically architecture ZnO for luminescence, photocatalytic, electrocatalytic, and energy storage applications (Singh et al. [6]);
- Influence of thermal annealing on the PdAl/Au metal stack ohmic contacts to p-AlGaN (Mallem et al. [7]);
- Effects of Al composition and high-temperature atomic layer-deposited Al_2O_3 layer on the leakage current characteristics of AlGaN/GaN Schottky barrier diodes (Lee et al. [8]);
- Growth of high quality GaN on Si (111) substrate by using two-step growth method for vertical power device application (Lee et al. [9]);

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- Crystalline AlN interfacial layer on GaN using plasma-enhanced atomic layer deposition (Hwang et al. [10]);
- Potato chip-like 0D interconnected $ZnCo_2O_4$ nanoparticles for high-performance supercapacitors (Mallem et al. [11]);
- Improved noise and device performance of AlGaN/GaN HEMTs with Insitu silicon carbon nitride (SiCN) cap layer (Choi et al. [12]);
- Band-gap properties of finite locally resonant beam suspended periodically with two-degree-of-freedom force type resonators (Lv et al. [13]);
- Dynamic performance characterization techniques in gallium nitride-based electronic devices (Santi et al. [14]).

The second group of papers deals with nano- and bio-material synthesis and structural/morphological characterization. The following papers are related to nano- and bio-materials:

- Facial synthesis, characterization, anti-microbial and anti-oxidant properties of alkylamine functionalized dumb-bell shaped copper-silver nanostructures (Mallikarjuna et al. [15]);
- Characterization and antibacterial response of silver nanoparticles biosynthesized using an ethanolic extract of Coccinia indica leaves (Chinni et al. [16]);
- Green synthesis of reduced graphene oxide-supported palladium nanoparticles by Coleus amboinicus and its enhanced catalytic efficiency and antibacterial activity (Mallikarjuna [17]);
- Optical properties and band gap of ternary PSN-PMN-PT single crystals (Long et al. [18]);
- Synthesis of thermally stable h-BN-CNT hetero-structures via microwave heating of ethylene under nickel, iron, and silver catalysts (Itas et al. [19]);
- Electronic and optical properties of polythiophene molecules and derivatives (Tsai et al. [20]).

I hope that this collection of papers will meet the expectations of readers looking for new advances in nano/micro- and bio-inspired materials on wide-bandgap-semiconductor-based optoelectronic/power devices, and also provide inspiration for further research work.

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