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Special Issue Reprint

Micro- and Nanotechnology of Wide Bandgap Semiconductors

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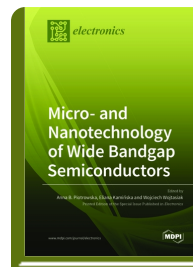
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Owing to their unique characteristics, direct wide bandgap energy, large breakdown field, and excellent electron transport properties, including operation at high temperature environments and low sensitivity to ionizing radiation, gallium nitride (GaN) and related group III-nitride heterostructures proved to be enabling materials for advanced optoelectronic and electronic devices and systems. Today, they are widely used in high performing short wavelength light emitting diodes (LEDs) and laser diodes (LDs), high performing radar, wireless telecommunications, as well 'green' power electronics. Impressive progress in GaN technology over the last 25 years has been driven by a continuously growing need for more advanced systems, and still new challenges arise and need to be solved. Actually, lighting industry, RF defense industry, and 5G mmWave telecommunication systems are driving forces for further intense research in order to reach full potential of GaN-based semiconductors. In the literature, there is a number of review papers and publications reporting technology progress and indicating future trends. In this Special Issue of Electronics, eight papers are published, the majority of them focusing materials and process technology of GaN-based devices fabricated on native GaN substrates. The specific topics include: GaN single crystalline substrates for electronic devices by ammonothermal and HVPE methods, Selective – Area Metalorganic Vapour – Phase Epitaxy of GaN and AlGaIn/GaN heterostructures for HEMTs, Advances in Ion Implantation of GaN materials including high pressure processing (lattice reconstruction), Coplanar waveguide (Mg and Be) and III-Nitride Nanowires for electronic and optoelectronic



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