

Abstract Submitted
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A Study of Photoluminescence and UV-Vis in Enhanced GaN Nanofibers¹ JOSHUA ROBLES-GARCIA, ANAMARIS MELENDEZ-ZAMBRANA, IDALIA RAMOS, University of Puerto Rico at Humacao — The photoluminescence (PL) and UV-Vis properties of Gallium Nitride (GaN) nanofibers were investigated for samples fabricated with a precursor solution containing Gallium Nitrate Hydrate, Cellulose Acetate, and Urea in the solvents Dimethylacetamide (DMA) and Acetone. GaN is a wide bandgap (3.4 eV) semiconductor that can be used in a variety of applications including solid-state lighting, high power, and high frequency devices. In previous work, we produced polycrystalline GaN nanofibers with wurtzite structure, using the electrospinning method and a thermal treatment in nitrogen and ammonia at 1000C. In this research we study the addition of urea to the precursor solution to enhance the crystallinity of the fibers at lower sintering temperatures. The molar ratios of urea added to the precursor range from 0 to 1.7 M. After electrospinning the fibers were sintered in Nitrogen at 450C for 3 hours and then, under ammonia gas flow at 900C for 5 hours. X-Ray Diffraction (XRD), UV-Vis spectroscopy, and PL measurements at room temperature were used to study the structural and optical properties of the fibers during the sintering process.

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