عنوان مقاله:

Green Method for Synthesizing Gallium Nitride Nanostructures at Low Temperature

محل انتشار:

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خلاصه مقاله:

Gallium nitride (GaN) nanostructures (NS) were synthesized using pulseddirect current plasma enhanced chemical vapor deposition (PDC-PECVD) on quartzsubstrate at low temperature (۶۰۰°C). Gallium metal (Ga) and nitrogen (N) plasma wereused as precursors. The morphology and structure of the grown GaN NS werecharacterized by field emission scanning electron microscope (FE-SEM), transmissionelectron microscopy (TEM) and X-ray diffraction (XRD). The XRD pattern shows thatGaN NS were grown in the hexagonal wurtzite-type crystal structure. The opticalproperties of the grown GaN NS were examined by photoluminescence (PL), UVvisibleand Raman spectroscopy. The PL spectroscopy measurements of the grown GaNNS showed blue shifts as compared to the GaN bulk structure. The Raman spectradisplayed three Raman active optical phonons at ۵۳۴ cm-۱, ۵۷۰ cm-۱ and ۷۳۰ cm-۱ .due toA۱ (TO), E۲ (high) and A۱ (LO), respectively

کلمات کلیدی:

Chemical Vapor Deposition, GaN, Green Method, Nanostructures, Optical Properties