

Preparation and characterization of GaP colloidal nanoparticles and films

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Abstract

In this communication, we present results of investigations of the influence of technological conditions upon the properties of GaP nanoparticles produced by using a new precursor as a source of Ga atoms. The obtained nanoparticles were investigated by means of XRD, EDAX, and TEM as well as by means of Raman light scattering and photoluminescence spectroscopy. The sizes of nanoparticles obtained with gallium acetylacetonate as a source of gallium are in the range of 10-40 nm according to estimations from TEM analysis. These values correlate with the position of the short-wavelength emission maximum in the photoluminescence spectra. A method of electrophoretic deposition of GaP nanoparticles from colloidal organosol solutions was elaborated. Raman spectra and XRD patterns, as well as optical transmission spectra have been measured for layers of GaP nanoparticles produced by this method.