



Linear and nonlinear optical properties of ZnO/PMMA nanocomposite films

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Résumé en anglais The nanoscale crystals (NCs) of ZnO were embedded into polymethylmethacrylate (PMMA) polymeric matrix and nanocomposite films were prepared by modified spin coating method. The surface of the ZnO/PMMA nanocomposite films has been investigated using atomic force and scanning electron microscopy. The prepared films are highly transparent, the ultraviolet-visible spectra show their high optical quality. The second and third harmonic generation (SHG and THG) studies of ZnO/PMMA nanocomposite films with different concentrations of ZnO NCs were carried out at $\lambda=1.064 \mu\text{m}$ and the effective values of the second and third order nonlinear susceptibilities were estimated to be higher than that of ZnO bulk for the films at low concentration of ZnO NCs. This could indicate that surface effects in ZnO/PMMA nanocomposite films have a dominant role over bulk effects for the SHG and THG processes.

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