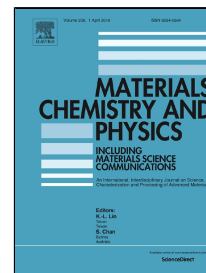


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Novel carbon nanospheres and poly(9-vinylcarbazole) composites: synthesis, structural and photo-physical properties of films elaboration

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Abstract

The photophysical and structural properties of poly(9-vinylcarbazole) and carbon nanospheres (CNS) based composites are investigated. The effect of CNS on the optical and vibrational properties of the new synthesized composite with several concentration weights (1.7, 3 and 5%) and also charge transfer process were examined by various optical and structural characterizations. Scanning and transmission electron microscopy were intended to show the morphology of CNS and their distribution on PVK matrix. States and time resolved photoluminescence decays of composites were used to evidence the charge transfer and dynamical properties of their excited states. The stability and the graphitized degree of CNS were found by Raman scattering analysis.

Key words: CNS; Composite; Raman; Optical properties, charge transfer.

1. Introduction

To date, the Carbon-based materials continue to attract considerable interest and growing at several levels of the scientific community, including naturally physicists and chemists, especially in both fundamental researchs and industrial applications [1]. Carbon nanotubes (CNT), graphene, fullerene and more recently carbon nanospheres are attracting more and more attention worldwide due to their excellent performance [2]. The growth of research of carbon particles [3] makes the birth of a new spherical form of carbon named carbon nanospheres

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