

SYNTHESIS OF NANOCOMPOSITE MATERIALS USING PLASMA POLYMERIZATION

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The domain of conjugated polymers based nanocomposites materials approach in this paper is actual [1-3] and presents an increased interest in the scientific community due multiple applications of these in organic electronics, sensors, electrodic materials, membrane [4].

In nanocomposites domain was developed different techniques for obtained of polymer nanocomposites by mechanical, chemical, electrochemical process. By combination of classical method of obtained of polymer nanocomposites that implied *in situ* polymerization of monomers of matrix polymer in the presence of nanostructures with plasma polymerization method was developed a interesting technique of processing of nanocomposites. The method involved a single-pass of deposition process, solvent-free and non post deposition treatment. Also synthesis directly on substrate of polymer nanocomposite thin films constituted a huge advantage.

The plasma polymerization method was applied in obtain of multiple polymer nanocomposite thin films: polyaniline- nanocarbon (PAni-NC), polyaniline-carbon nanotubes (PAni-NT), polyaniline-silicon dioxide (PAni-SiO₂) and poly thiophene -silicon dioxide (PTh-SiO₂).

Complex characterizations by FT-IR and Raman spectroscopic studies, AFM, SEM, TEM, SAED, XRD analyses and electrical characterizations of obtained structures deposited by plasma polymerization method confirm that this technique is a good choice for synthesis of polymer nanocomposite films.

References:

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