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Tiago V. Freitas, Eliraldrin A. Sousa, Gilberto C. Fuzari Jr, Elen P.S. Arlindo

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Different morphologies of polyaniline nanostructures synthesized by interfacial polymerization

Tiago V. Freitas^a, Eliraldrin A. Sousa^b, Gilberto C. Fuzari Jr^a, Elen P. S. Arlindo^{a,*}

^a Instituto de Ciências Exatas e da Terra, Universidade Federal de Mato Grosso, CEP 78600-00, Barra do Garças, MT, Brazil.

^b Departamento de Física e Química, Universidade Estadual Paulista, CEP 15385-000, Ilha Solteira, SP, Brazil.

* Corresponding author

E-mail address: elenpoliani@yahoo.com.br

Abstract

In this study, different morphologies of polyaniline (PAni) nanostructures were obtained via interfacial polymerization. The influence of the time and temperature of polymerization on morphology was investigated. At room temperature the growth of nanosheets and nanoflowers with long polymerization time (1-5 days) was observed. In the syntheses carried out at 50°C the same nanostructures were obtained with only a few hours of polymerization, which illustrates that the increase in temperature considerably reduced the synthesis time and also provided the growth of nanofibers, morphology not found in the syntheses performed at room temperature. The characterization by XRD indicated the presence of diffraction peaks characteristic of PAni nanostructures with high crystallinity. As the conductivity of PAni is directly related to its crystallinity, it is expected that the nanostructures obtained have high conductivity, which may represent a greater potential for diverse applications. It can be concluded that the proposed synthesis presents a simple alternative for obtaining PAni nanostructures with different morphologies and high crystallinity.

Keywords: polyaniline, interfacial polymerization, nanofibers, nanosheets, nanoflowers.

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