Synthesis and Optical and Electrical Characterization of Composites Based of PAni/V$_2$O$_5$

W. D. G. Gonçalves$^1$(IC), M. D. S. Neto$^1$(PG), C. T. P. Silva$^1$(IC), G. R. da SILVA, N. L. C. Domingues$^1$(PQ), G. P. G. Freschi$^1$(PQ) and A. W. Rinaldi$^1$(PQ)

$^1$UFGD - Universidade Federal da Grande Dourados, Brazil
GQMA - Grupo de Química e Microbiologia Aplicada
LMH - Laboratório de Materiais Híbridos

This paper presents the results of the synthesis and characterization of nanostructured composite consisting of PAni/V2O5. The optical properties were analyzed using the techniques of FTIR, UV-Vis, and the electrical properties were performed using electrochemical tests. The materials were obtained by the insertion of inorganic nanostructures of V2O5 in the PAni matrix. The synthesis of nanostructured V2O5 was carried out using Pechinni’s methods by combining a polyalcohol, metallic ion and a hydroxycarboxylic acid to form a polymer. The material initially received heat treatment at 350°C and then at 700°C resulting in a ceramic/particle phase. By the analysis of electroactivity it was possible to observe the action of the electroactive material, which presents obvious characteristic peaks of oxidation and reduction in the composite of their constituents. By optical characterization it was possible to suggest the efficiency in the process of synthesis. Through the optical characterization was suggest possible efficiency in the synthesis process. This hypothesis may be reinforced by analyzing the infrared spectrum. Where it was possible to observe the characteristic signs of metal oxide in the polymer matrix.

Keyword: conducting polymers, PAni, V2O5, nanostructure, pechinni.

Work supported by the National Counsel of Technological and Scientific Development through the process nº: 180285/2009-2


e-mail: wellingtondouglas4@gmail.com
Rua. Rita Carolina Farias de Almeida, 481 – Dourados/MS/Brasil.