nanocomposites has been investigate by in vitro cell tests. SEM images were obtained after the tests, in case of appearing any indication of cytotoxicity. Bioactivity of PEEK/ Mg32 (Al ,Zn)49 was compared with pure PEEK. Crystallinity evaluation of these nanocomposites carried out by differential scanning calorimeter (DSC). Tensile strength tests were performed in order to investigate mechanical properties of PEEK/ Mg32 (Al ,Zn)49.

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Diffusion of Water Molecules in Microporous Caa Zeolite-Based Adsorbents. Effect of Zn-Ag Bimetal Ion Exchange

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Zeolites are microporous crystalline aluminosilicates generally used as size selective adsorbents in the chemical, petrochemical and pharmaceutical industries [1]. Recently, A zeolites type have been used to prepare new mineral-based hemostatic dressings applied to control heavy bleeding resulted from both military and civilian trauma [2]. The mineral materials act as adsorbents that dehydrate the hemorrhaging blood by adsorbing water molecules, modify the local electrolyte conditions, and induce hemostasis. In spite of the success of zeolite-based hemostatic agents in controlling bleeding and reducing the amount of heat release during water adsoption, the effect of porous properties on water diffusion in microporous media is limited and the associated phenomena are not well understood. In the present study, bimetallic Zn-Ag-exchanged A zeolites are successfully prepared via the liquid ion exchange method following a procedure reported in our previous study [3]. Thermodravimetry (ATG), differential scanning calorimetry (DSC) and thermal activity monitor (TAM) techniques clearly highlights the complexity of the adsorption and diffusion mechanisms of water molecules within the exchanged zeolite micropores. The diffusion kinetics and hydration heat appear to be controlled mainly by the prehydration rate, ion exchange degrees and location of Ca, Ag and Zn species in the cationic position of the A zeolite framework.

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Characterization of Polystyrene Nanocomposites Containing Nanoparticles of Pseudoboehmite Obtained by Sol-Gel Process

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Polymer nanocomposites are hybrid materials in which inorganic substances of nanometric dimensions are dispersed in a polymeric matrix. These substances have high surface area allowing a better interaction with the polymeric matrix and consequently promote changes in the physical properties of the final composite with small additions of the same. The preparation of nanocomposites with polymer matrix allows in many cases to find a relationship between a low cost due to the use of lower amount of charge, reaching high level of performance. In this work, were obtained polystyrene nanocomposites with pseudoboehmite synthesized by the sol-gel process with different concentrations of pseudoboehmite using octadecylamine as a coupling agent. The nanocomposites were prepared by the melt intercalation technique and characterized by differential thermal analysis, thermogravimetric analysis, heat deflection temperature, Vicat softening point, mechanical and rheological tests. The results showed an increase in the thermal properties, hardness and tensile strength values and decrease in the melt index, impact resistance and tensile elongation, showing the interaction of the filler with the polymer matrix.

Keywords: Nanocomposite. Pseudoboehmite. Polyestyrene. Characterization of nanostructured polymer composites.

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Use of Gamma-Alumina Nanoparticles for Drug Delivery System for Releasing Acyclovir

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The sol-gel process is a method for preparing porous ceramics, vitreous and crystalline materials from molecular precursors. In this process, a lattice of oxide compounds is made through reaction of inorganic materials in aqueous solution. The sol-gel process may be used to produce nanoparticles of pseudoboehmite, which are employed in drug delivery systems, production of nanocomposites and in the synthesis of gamma-alumina [1,2,3]. The firing of pseudoboehmite produces pure gamma-alumina [4,5]. The use of nanoparticles in drug delivery systems is advantageous because it prevents repeated doses and also decreases the amount of drug intake, which not only enhance the therapeutic effect, but also reduces the risks of plasma concentration reaching toxic levels. The use of synthetic nanoparticles have attracted great interest for applications in drug delivery systems. Pure gamma-alumina obtained from