Electrokinetic Properties of Polypyrrole/Expanded Perlite Conducting Composite

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Conducting polymers have attracted attention due to their promising applications in various area of electronics such as magnetic recording materials, effective quantum electronic devices, sensors, toners in photocopying, smart windows conductive paints, rechargeable battery electrolytes [1-6]. PPy is an insulator, which has attracted intense attention due to its environmental stability, ease of synthesis, exciting chemical and electrical properties, but its oxidized derivatives are good electrical conductors. Perlite is a glassy volcanic rock, which is commonly light gray, with a rhyolitic composition and 2 to 5% of combined water, and it is one of the most important material because of its low thermal conductivity, high absorption of sound, low bulk density, and fire resistance, perlite aggregate plasters hold many advantages over conventional plaster [7].

In this study, Polypyrrole/Expanded Perlite (PPy/EP) composites were synthesized different rates (%10, %30 and %50) by in situ radicalic polymerization method with the presence of FeCl3 in HCl medium. Structural and some physical properties of PPy/EP composites were characterized by using FTIR, TGA, SEM and XRD techniques. Electrokinetic properties of PPy/EP composites in polar and non-polar media were examined as functions of time, pH, various electrolytes, surfactants, and temperature.

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