

Electrical Conductivity Response of Poly(Phenylene-vinylene)/Zeolite Composites Exposed to Ammonium Nitrate

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Abstract: Poly(p-phenylenevinylene) (PPV) was chemically synthesized via the polymerization of p-xylene-bis(tetrahydrothiophenium chloride) monomer and doped with H₂SO₄. To improve the electrical conductivity sensitivity of the conductive polymer, Zeolites Y (Si/Al = 5.1, 30, 60, 80) were added into the conductive polymer matrix. All composite samples show definite positive responses towards NH₄NO₃. The electrical conductivity sensitivities of the composite sensors increase linearly with increasing Si/Al ratio: with values of 0.201, 1.37, 2.80 and 3.18, respectively. The interactions between NH₄NO₃ molecules and the PPV/zeolite composites with respect to the electrical conductivity sensitivity were investigated through the infrared spectroscopy.

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