

Temperature effect on Electrical Properties of PU/Ni(0) Nanocomposites

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Abstract . Polyethylene glycol and Isophorene diisocyanate are used to prepared pure polyurethane (PU) polymer. The 25 wt percent of Ni nanoparticles doped into pure polyurethane to synthesize PU/Ni (25%) nano-composites. The formation of pure polyurethane and nickel-polyurethane nano-composites were confirmed by XRD analysis. The variation of temperature on some electrical properties (i.e. tangent loss, electrical modulus, ac conductivity, Nyquist plots etc.) of the nanocomposites has produced some interesting results useful for device applications. The electrical properties of pure polyurethane have drastically changed due to addition of nickel nanoparticles (as filler) in the polymer. The decreasing tendency of ac conductivity and low tangent loss make nickel-polyurethane nano-composites as smart dielectric materials and very useful for energy storage, biomaterials and shape memory.

Keywords: Polyurethane, Electrical properties, ac conductivity, nanocomposites.

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