

### Preparation and characteristics of conductive polymer nanocomposites based on silver nanowires

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Metallic nanowire-based polymer nanocomposite is one of the advanced materials by the potential application of emerging nanotechnologies. In particular, silver nanowires with excellent electrical conductivity and high aspect ratio are critical for the preparation of conductive polymer nanocomposites. In this work, silver nanowires were synthesized using a polyol method, which is suitable for offering high yield of long and thin nanowires. Highly conductive polystyrene/silver nanowire nanocomposites were prepared and their electrical and rheological properties were investigated. Suspension of silver nanowires was incorporated with polystyrene to produce polymer nanocomposites with nanowire network structure providing electrical pathways. Electrically conductive network of silver nanowires was obtained at the electrical percolation threshold of 0.49 vol% silver nanowires, and the maximum electrical conductivity of  $10^2$  S/m was obtained at 1 vol%. Dynamic rheological properties evaluated at 1 vol% also confirmed that silver nanowires were physically connected to one another at this concentration.