Synthesis and Characterisation of Polypyrrole-coated Polystyrene Latex Particles

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Workers at DSM Research have recently reported[1] that PEO-stabilised sub-micronic latex particles can be coated with a layer of polypyrrole in aqueous media to form conducting polymer latexes which exhibit good colloid stability. The conducting polymer is formed as a thin layer at the surface of the latex particles. We have recently demontrated[2] that this protocol can be adapted to coat PVP-stabilised polystyrene latex particles in the 1 to 5 μm size range with a thin uniform layer (< 15 nm) of polypyrrole in aqueous media to form conducting polymer-latex composites. The synthesis conditions can be varied in order to control the conducting polymer loading in the final composite particle. We have extensively characterised these particles using a variety of techniques, including: electron microscopy, disc centrifuge photosedimentometry, Raman spectroscopy, atomic force microscopy, X-ray photoelectron spectroscopy, infrared spectroscopy and elemental microanalyses.

1. A. Wiersma and L. M. A. Steeg, *Europ. Patent No.* 589,529.
2. S. F. Lascelles and S. P. Armes, *Adv. Mat.* **1995**, 7, *10*, 864.