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SYNTHESIS OF HOLLOW AND CORE/SEHLL TYPE POLYANILINE COLLOID AND ITS MICROWACE ABSORPTION APPLICATION

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The core/shell type polymer colloid with polyaniline (PANI) layer was prepard by using seed emulsion polymerization, and the hollow polyaniline sphere particle was successfully obtained with followed solvent extraction method in this study. The average size of polymer particle was about 220 nm and the thicknes of polyaniline shell was about 35 nm from the TEM micrographs measurement, as shown in Figure 1. The microwave absorption properties of the hollow particles PANI show a maximum reflection loss of -32 dB, which is better than that of the pristine PANI particle, as the hollow PANI particle were mixed with the epoxy resin. Furthermore, we added the magnetic nanoparticle, $NiFe_2O_4$, on the surface of hollow PANI particle to prepare the multilayer PANI/$NiFe_2O_4$ hollow nanoparticle. This kind of composite particle also have good performance on the microwave absorption application.

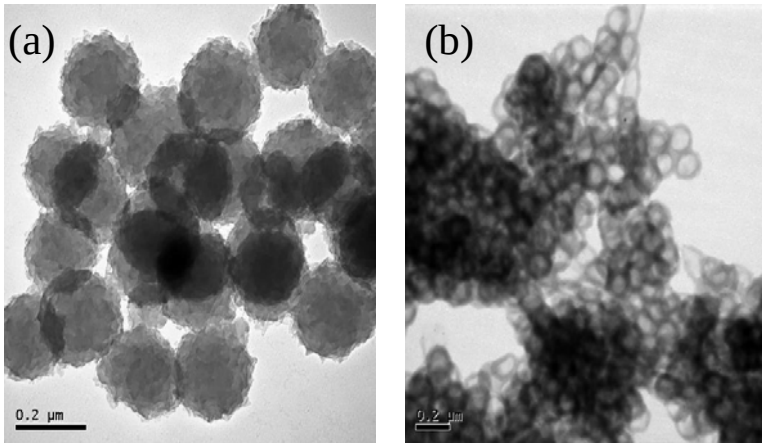

Figure 1: TEM photographs of the (a) core/shell type, and (b) the hollow PANI nanoparticle

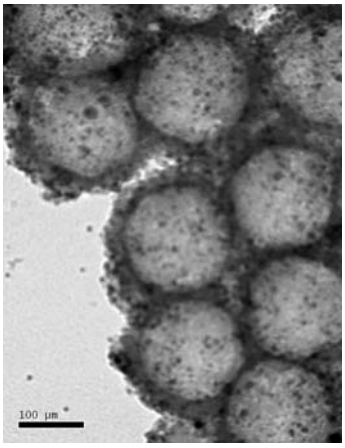

Figure 2: TEM photographs of the hollow PANI/$NiFe_2O_4$ nanoparticle

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