

Preparation and characterization of silver immobilized core/shell n-octadecane/Polyurea in Miniemulsion Process

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Silver nanoparticles immobilized polyurea particles containing the PCM were synthesized by miniemulsion polymerization. Moreover to maximize the response rate, silver nanoparticles are immobilized on the shell of PCM particles. The particles prepared with different parameters were investigated in terms of latent heat storage of encapsulated n-octadecane as PCM. The morphology and particle features of PCM particles were analyzed by scanning electron microscope and transmission electron microscope, respectively. The stable and spherical PCM particles of nano-size were obtained by miniemulsion polymerization, and silver nanoparticles were immobilized on the particles well. Thermal properties of fabricated particles were studied by differential scanning calorimetry. From DSC freeze-thaw cycle, the particles exhibited the thermal energy storage and release behaviors. We expect the fabricated capsules have a good potential as thermal energy storage medium.