

Surfactant-free fabrication of phase change material emulsions (PCMEs) using mineral oxide Pickering emulsifiers

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Phase change material emulsions (PCMEs) are an attractive two-phase heat transfer fluid where the PCMs that can store or release latent heats during their phase change at a desired temperature are dispersed in the form of fine droplets in a carrier fluid. The majority of the PCMEs were prepared previously by using organic molecular surfactants, some of which might possess health and environmental risks. Herein, we demonstrate the surfactant-free fabrication of docosane (C₂₂H₄₆)-based PCMEs by utilizing various mineral oxide nanoparticles (MONPs) as Pickering emulsifiers, which showed promising thermal properties.