

Electrostatic stabilization of eutectic gallium–indium (EGaIn) nanoparticles in nonpolar oils

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Eutectic gallium–indium (EGaIn) is a low-risk and highly conductive liquid metal (LM) alloy used in a variety of fields, including electronic devices, self-healing composites, actuators, and sensors. Despite the numerous application researches on EGaIn-embedded systems to date, fundamental studies on colloidal behavior of EGaIn nano- and microparticles dispersed in liquid media has been less focused. Particularly, there is no study on LM dispersions whose continuous phases are nonpolar liquids. Herein, we discuss the colloidal behavior of EGaIn nano- and microparticles counterintuitively stabilized by a series of oil-soluble surfactants in saturated hydrocarbons with low dielectric constants of ~ 2 .