17d Aqueous-Core Capsules Via Direct Interfacial Polymerization

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Aqueous-core capsules have wide-ranging applications in the high efficiency encapsulation and controlled delivery of drugs, dyes, enzymes, and many other substrates. Here, we produce liquid-core capsules with aqueous cores and uniform, controllably thick polymeric shells based on interfacial free-radical alternating copolymerization. Monodisperse aqueous core capsules in the range of 1μm to 10μm diameter are prepared by interfacial polymerization of inverse emulsion drops with oil soluble maleate esters and water-soluble vinyl ethers. Optical microscopy technique is used to demonstrate the presence of micron-sized spherical capsules. Encapsulation of fluoresce dyes in polymeric shell enables us to obtain three-dimensional images of aqueous-core capsules by the confocal microscopy.