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Monodisperse polymethyl methacrylate (PMMA) spheres in organic media: synthesis update ANDREW HOLLINGSWORTH, MARK ELSESSER, WILLIAM IRVINE, DAVID PINE, PAUL CHAIKIN, New York University — Since the publication of Antl, et al. [Colloids and Surfaces 17 (1986) 67–78] more than 20 years ago, several research groups in the soft condensed matter area have attempted the dispersion polymerization of sterically-stabilized PMMA particles. Most have found that success of this particular synthesis depends critically on the quality of the comb-graft stabilizer, poly(12-hydroxystearic acid)-g-PMMA. More recent work has extended the particle synthesis to include the incorporation of covalently attached, fluorescent dyes in the particle interior. Our goal has been to reproduce some of these results— a challenging task— and to improve the process, leading to a reliable method for preparing core-dyed PMMA particles. We will report on several important findings related to this research goal, and demonstrate that our particles can be used to make colloidal clusters via the recently published emulsion encapsulation and shrinkage technique [Science 301, 483–487 (2003)].

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