

**Nano-Objects from Oleic Acid-Derived Stabilizer via Non-polar RAFT  
Dispersion Polymerization and their In Situ Surface Decoration**

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Surface decoration of nano-objects is highly desirable to afford nano-particles with diversified features and functions. Herein are reported the surface functionalization of dispersed block copolymer nano-objects. First, poly(2-(methacryloyloxy)ethyl oleate) (PMAEO) was prepared by reversible addition-fragmentation chain transfer (RAFT) polymerization and employed it in the RAFT dispersion polymerization (RAFTDP) of benzyl methacrylate (BzMA) in n-heptane at 70 °C.<sup>1</sup> Nanoparticles with various morphologies such as spheres, worm, vesicles and large compound vesicles (LCV) were obtained by varying the length of the solvophobic block and the total solid content at which the block copolymerization is performed. Purely worm phase forms free-standing soft gels at room temperature because of inter-worm entanglement, which underwent degelation at higher temperature, causing morphological transformation from anisotropic worm to isotropic sphere. Finally, different thiol compounds have been ligated onto the PMAEO segment. Thiol-ene modification reactions of the as-synthesized nano-objects retain their morphologies as visualized by field emission-scanning electron microscopy (FE-SEM). Thus, the facile and modular synthetic approach presented in this study allowed in situ preparation of surface modified block copolymer nano-objects at very high concentration, where renewable resource derived oleate surface in the nanoparticle was functionalized.<sup>2</sup>

**References:**

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2. Maiti, B.; Bauri, K.; Nandi, M.; De, P. *J. Polym. Sci. Part A: Polym. Chem.* **2017**, *55*, 263-273.