

Fluorinated Raspberry-Like Polymer Particles for Superamphiphobic Coatings

Weijie Jiang, Claudia M. Grozea, Zengqian Shi and Guojun Liu*

Department of Chemistry, Queen's University, 90 Bader Lane, Kingston, Ontario, Canada K7L 3N6

Video File “cooking oil.avi”. This video shows cooking oil droplets rolling off a glass plate coated with fluorinated raspberry-like particles. The droplets were dispensed from 1.0 cm above the substrate.

Video File “diiodomethane.avi”. This video shows diiodomethane droplets rolling off a glass plate coated with fluorinated raspberry-like particles. The droplets were dispensed from 1.0 cm above the substrate.

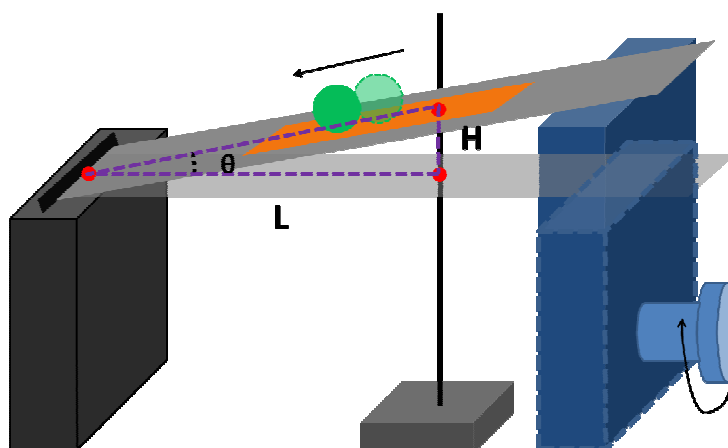


Figure S1. Schematic of home-built apparatus for measuring sliding angles.

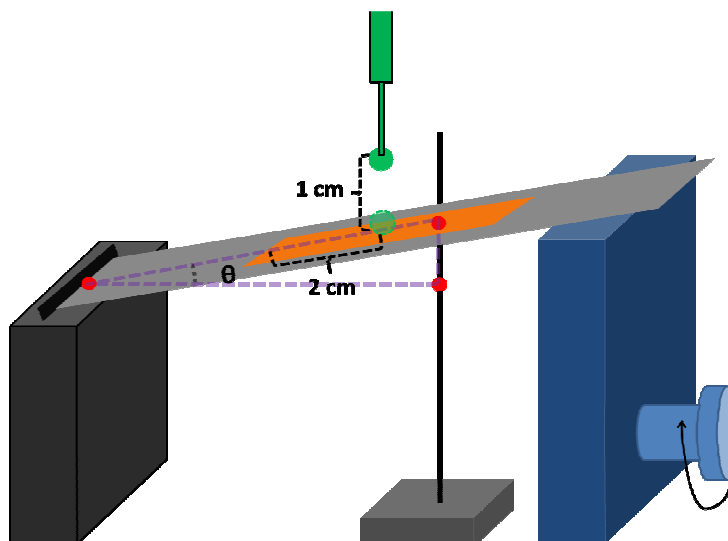


Figure S2. Schematic of home-built apparatus for measuring shedding angles.

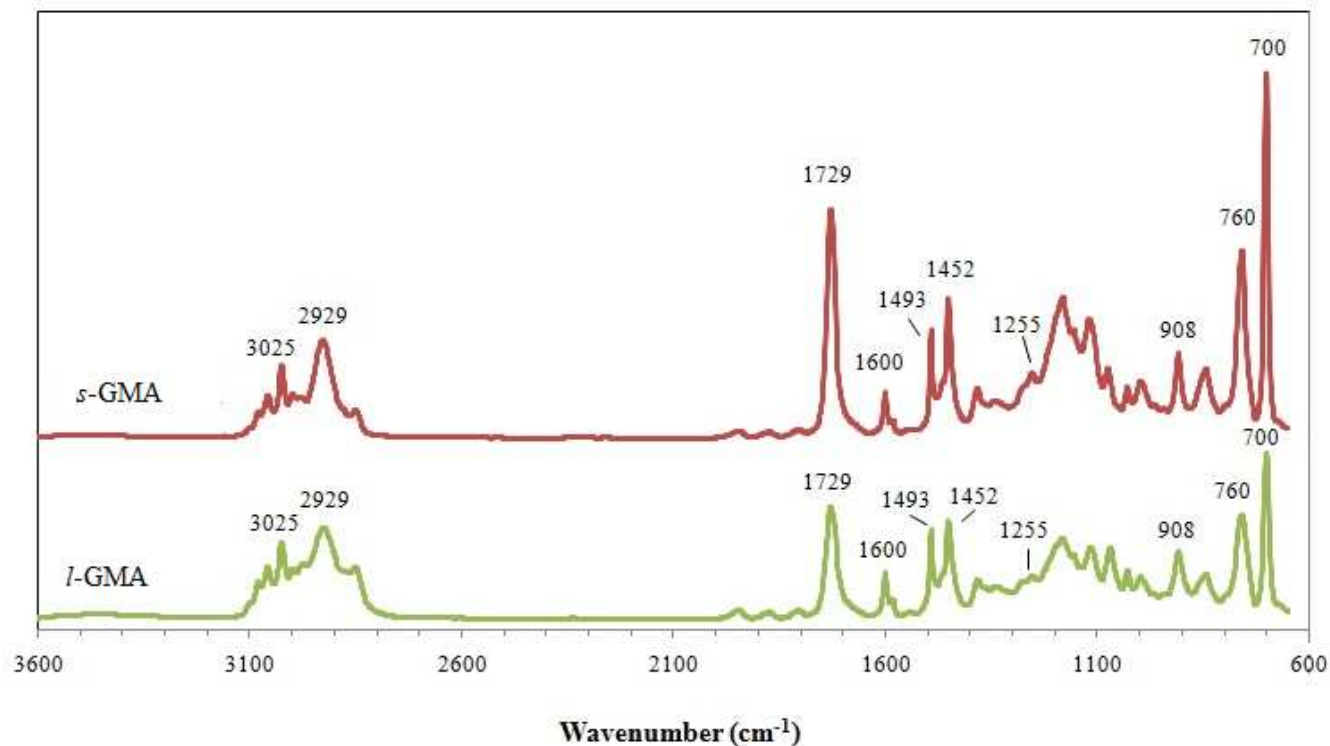


Figure S3. Diffuse reflectance infrared spectra of *s*-GMA (top) and *l*-GMA (bottom) particles.

In the diffuse reflectance infrared spectra, the absorption peaks for PS corresponds to the phenyl group at 3025 cm⁻¹ (sp² C-H stretching, aromatic), 1600 cm⁻¹ (C=C stretching, aromatic), 1493 and 1452 cm⁻¹ (C-H bending, backbone), 760 and 700 cm⁻¹ (C-H bending, aromatic) and a peak at 2929 cm⁻¹ corresponds to the methylene stretching.¹⁻³ The absorption peak at 1729 cm⁻¹ (C=O stretching) and the peaks at 1255 and 908 cm⁻¹ (C-O stretching, epoxy) corresponds to the GMA functionalization.¹⁻³



Figure S4. Photographs of vials containing l -NH₂ particles dispersed in deionized water before reaction with ninhydrin on the left side of the image and after reaction with ninhydrin on the right. The purple color is indicative of a positive test for amino groups.

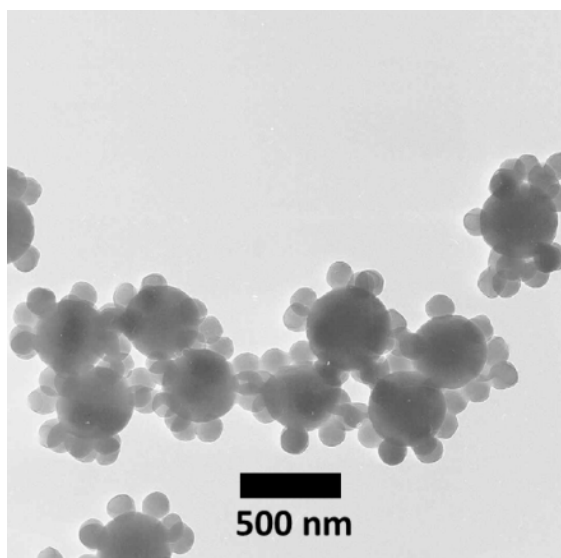


Figure S5. TEM image of RB particles prepared at a number ratio of 1:40 l -NH₂ particles to s -GMA particles.

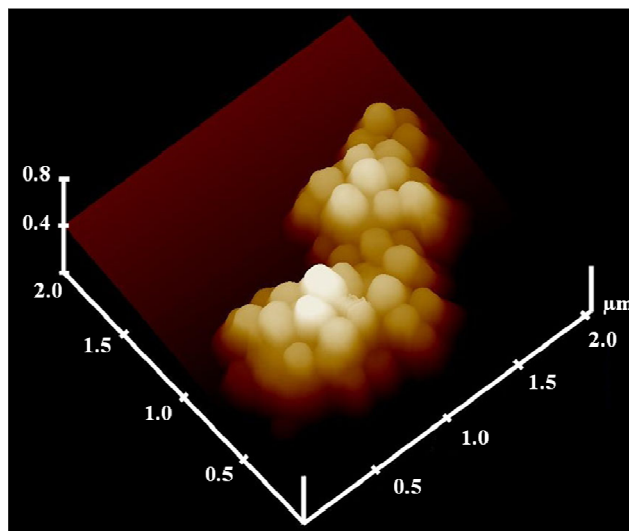


Figure S6. AFM image of RB particles prepared at a number ratio of 1:100 *l*-NH₂ particles to *s*-GMA particles.

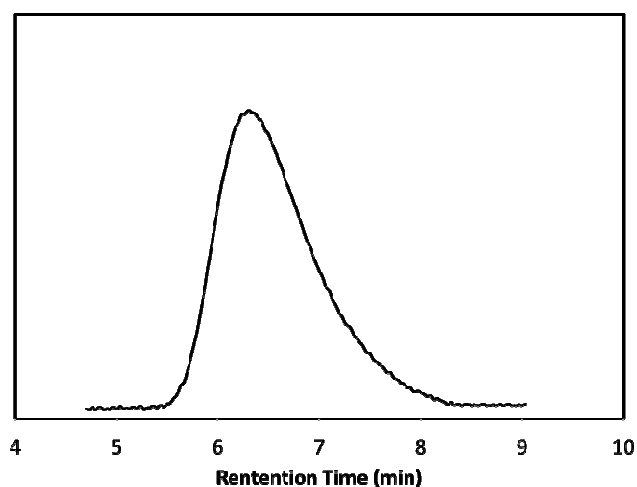


Figure S7. SEC trace of P(FOEMA-co-GMA).

References:

- (1) Liang, C. Y.; Krimm, S. Infrared Spectra of High Polymers. VI. Polystyrene. *J. Polym. Sci.* **1958**, 27, 241-254.
- (2) Zeng, Z.; Yu, J.; Guo, Z.-X. Preparation of Epoxy-Functionalized Polystyrene/Silica Core-Shell Composite Nanoparticles. *J. Polym. Sci. A: Poly. Chem.* **2004**, 42, 2253-2262.

(3) Stuart, B. H. *Infrared spectroscopy: fundamentals and applications*. John Wiley & Sons: Chichester, UK, 2004.