Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting Information for the manuscript:

DISPERSION-BASED, SCALABLE FABRICATION OF REPELLENT SUPERHYDROPHOBIC AND LIQUID-INFUSED COATINGS AT AMBIENT CONDITIONS

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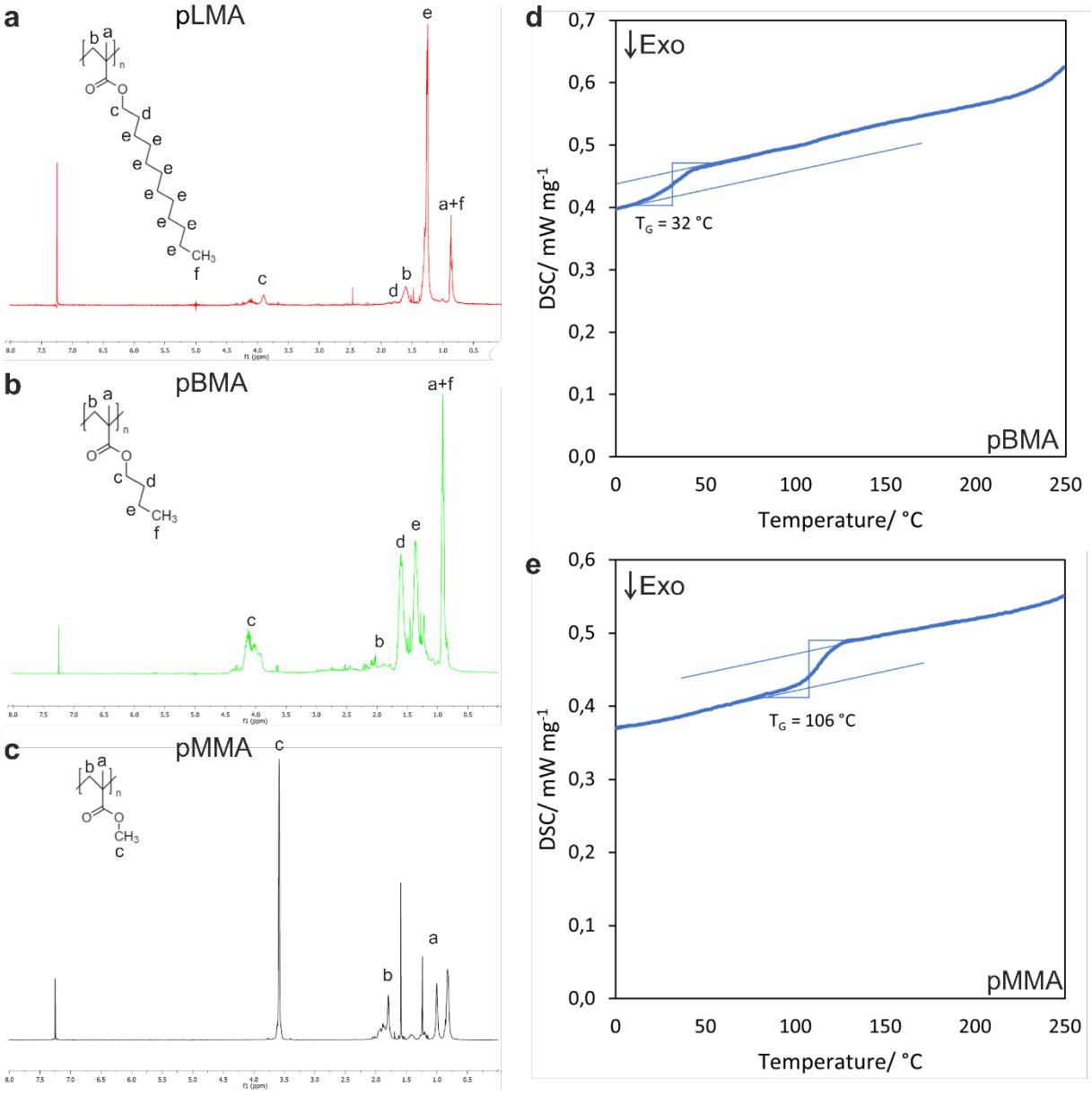

Figure SI 1: Chemical structure and glass transition temperature of the synthesized colloidal polymeric particles: ^1H NMR spectra for (a) pLMA, (b) pBMA, (c) pMMA and DSC measurements for (d) pBMA and (e) pMMA. The NMR results match well to other reported spectra of the polymers.[1–3] Note that the DSC spectra for pLMA did not show any features as the glass transition is below the temperature range of the instrument.

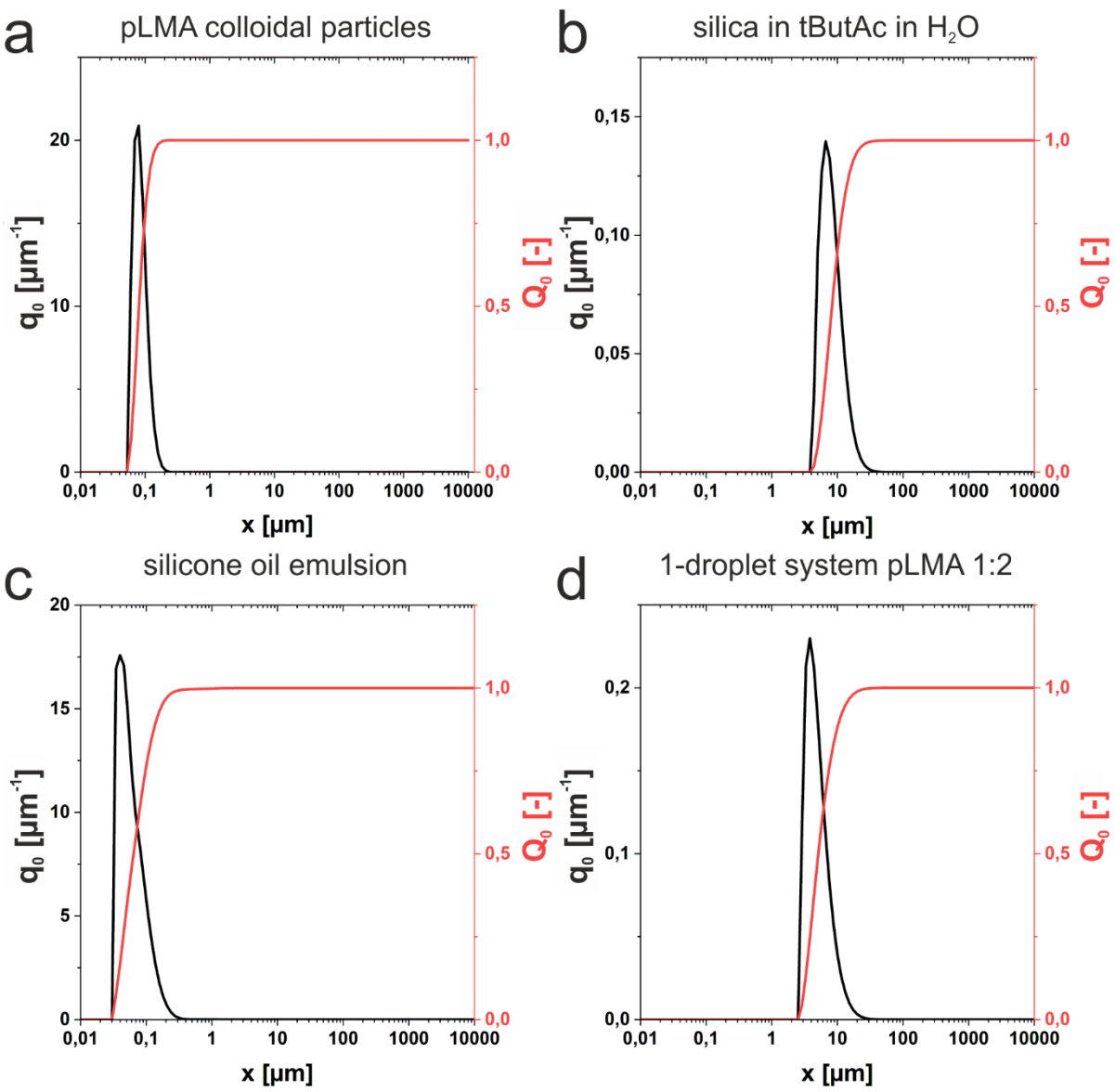

Figure SI 2: Size distributions of the individual particle components and coatings systems: a) Colloidal poly lauryl methacrylate particles in water synthesized via miniemulsion polymerization. b) Eemulsion of microdroplets in water containing fumed silica dispersed in tert-butyl acetate as part of the 2-droplet coating system. c) Nanodroplets of silicone oil emulsion in water to infiltrate the superhydrophobic coatings. d) Emulsion of microdroplets containing 1-droplet system of poly lauryl methacrylate with 1:2 polymer to silica ratio in tert-butyl acetate.

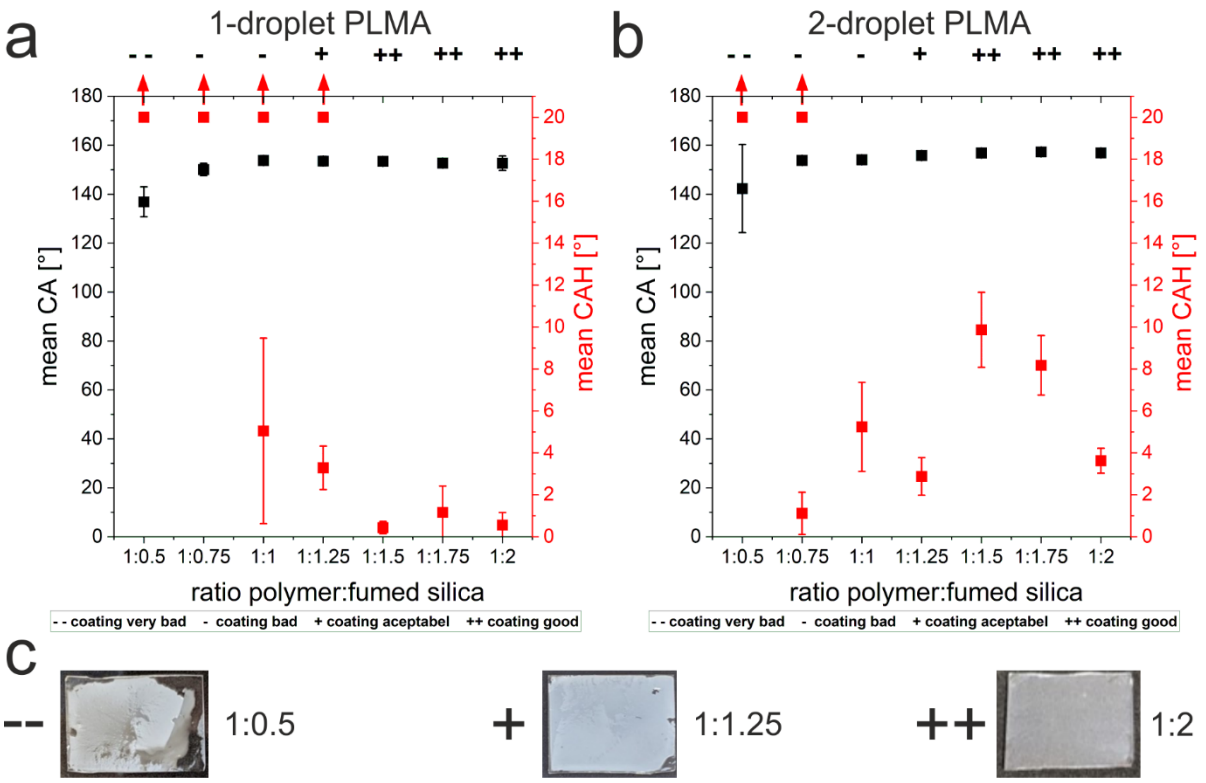

Figure SI 3: Film formation and wetting behavior of coatings based on the 1-droplet or 2-droplet systems with different polymer to silica ratios. a) Exemplary mean water contact angles (CA), contact angle hysteresis (CAH) and film formation evaluation of 1-droplet systems with poly lauryl methacrylate. b) Exemplary mean CAs, CAHs and film formation evaluation of 2-droplet systems with poly lauryl methacrylate. c) Photographs demonstrating the evaluation of film formation quality, shown for the 1-droplet systems at well-selected polymer to silica ratios

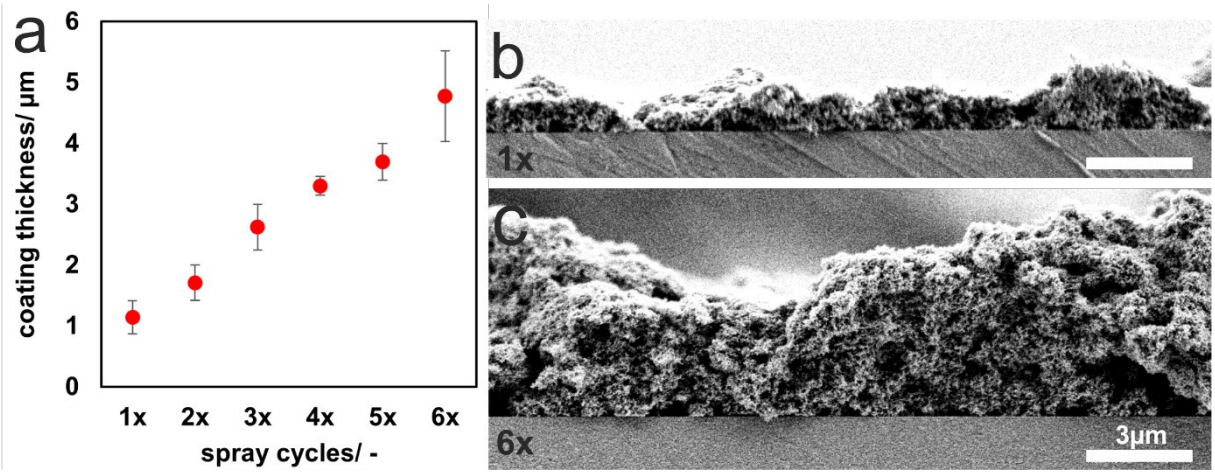

Figure SI 4: Thickness of the prepared coatings as a function of the applied spray cycles (a). The average thickness was determined from SEM sideview images. Exemplary sideview images after 1x spraying (b) and 6x spraying (c)

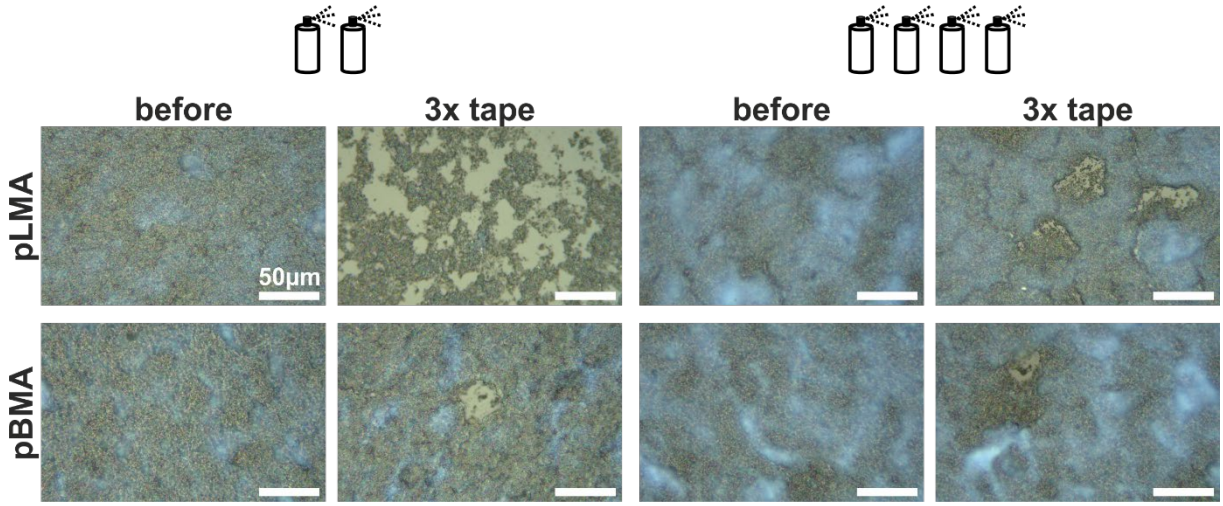

Figure SI 5: Optical microscope images before and after three tape cycles for the 1-droplet pLMA (top) and pBMA (bottom) systems. Exemplary samples were prepared with two (left) and four (right) spray cycles.

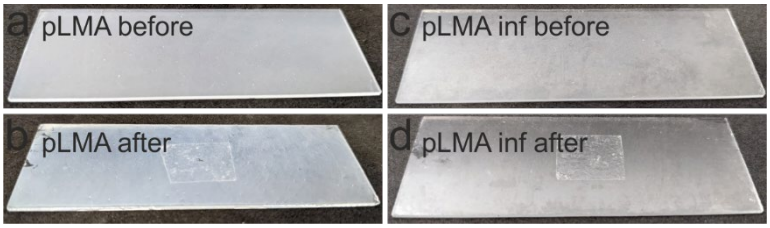

Figure SI 6: Exemplary photographs of superhydrophobic (left) and liquid-infused (right) coatings before (a+c) and after 10 aging cycles (b+d). The coatings were prepared by the 1-droplet system.

References:

1 K. Hatada, T. Nishiura, T. Kitayama, K. Ute and S. Hirotani, *Polym. J.*, 1996, **28**, 185–188.

2 V. Strehmel, A. Laschewsky, H. Wetzel and E. Görnitz, *Macromolecules*, 2006, **39**, 923–930.

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