Supplementary Information

Impact of high conductivity on particle transport to liquid droplets for liquid marble formation

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Density and mass calculation example for nickel coated particles

$$Core\ PS\ diameter = 84\ \mu m$$

$$PS\ density = 1.07 \frac{g}{cm^3}$$

$$Ni\ layer\ thickness = 1.7\ \mu m$$

$$Ni\ density = 8.9 \frac{g}{cm^3}$$

$$PS/Ni\ particle\ diamter = 85.7\ \mu m$$

$$mass\ of\ PS\ core = \frac{4}{3}\pi\left(\frac{8.4 \times 10^{-5}}{2}\right)^3 m^3 \times 1070 \frac{kg}{m^3} = 0.33 \times 10^{-6} g$$

$$volume\ of\ nickel\ shell = \frac{4}{3}\pi\left(\frac{8.57 \times 10^{-5}}{2}\right)^3 - \frac{4}{3}\pi\left(\frac{8.4 \times 10^{-5}}{2}\right)^3 = 1.92 \times 10^{-14}\ m^3$$

$$mass\ of\ nickel\ shell = 1.92 \times 10^{-14}\ m^3 \times 8900 \frac{kg}{m^3} = 0.18 \times 10^{-6} g$$

$$total\ mass\ of\ a\ nickel\ coated\ PS\ particle = (0.18 + 0.33) \times 10^{-6} = 0.53 \times 10^{-6} g$$

Cohesion

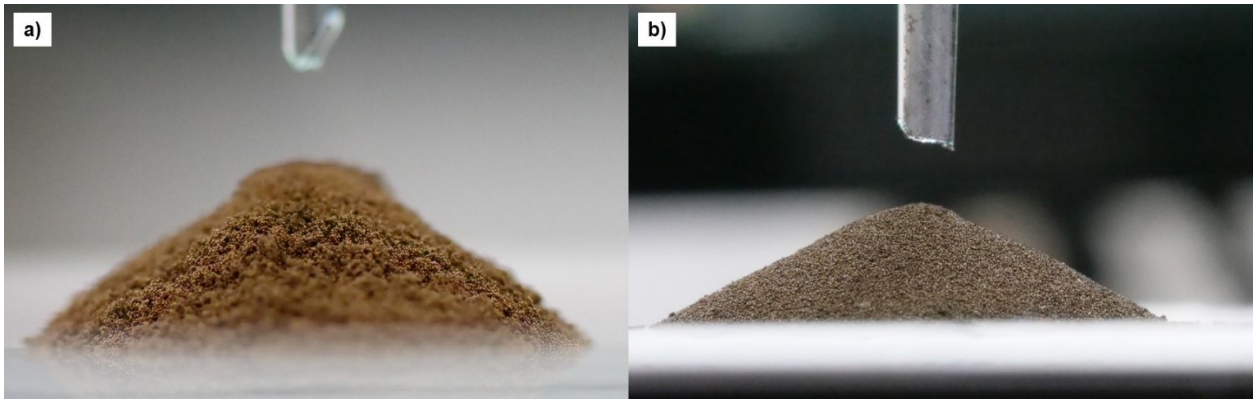

Figure S1: Examples of images used to calculate the angle of repose of a) PS/Au and b) PS/Ni.

Contact angle

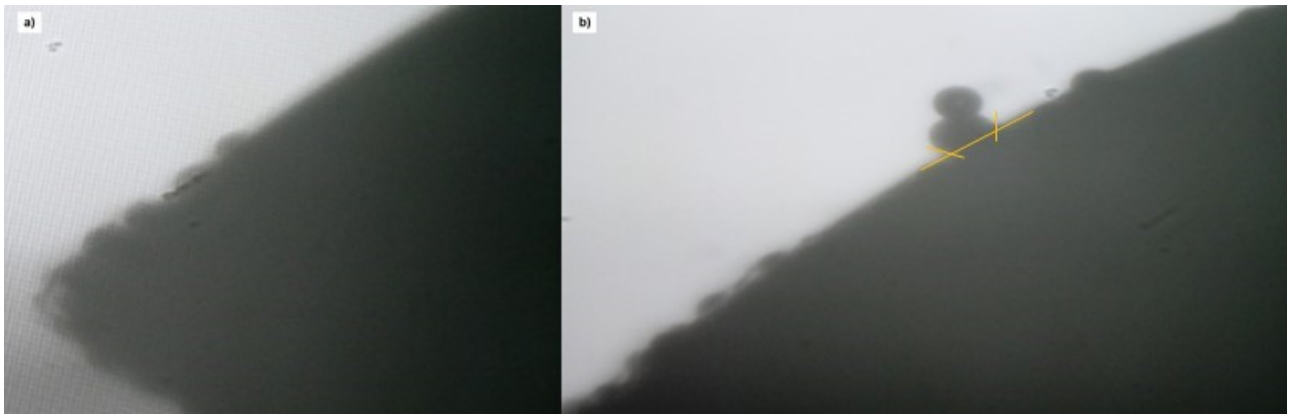

Figure S2: Examples of images used to measure contact angle of particles on a sessile water droplet for a) PS/Au and b) PS/Ni.

The contact angle was measured via using a filter on the particles on the sessile droplet interfaces, to increase the contrast between the particles and the droplets. Then, lines were added along the interfaces in Photoshop, and angles measured using the line functionality, provided in Photoshop, an example is added to Figure S2 b).