Electronic Supplementary Material (ESI) for RSC Advances.

Sustainable Synthesis of Metal-Coated Emulsion Droplets

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SUPPORTING INFORMATION

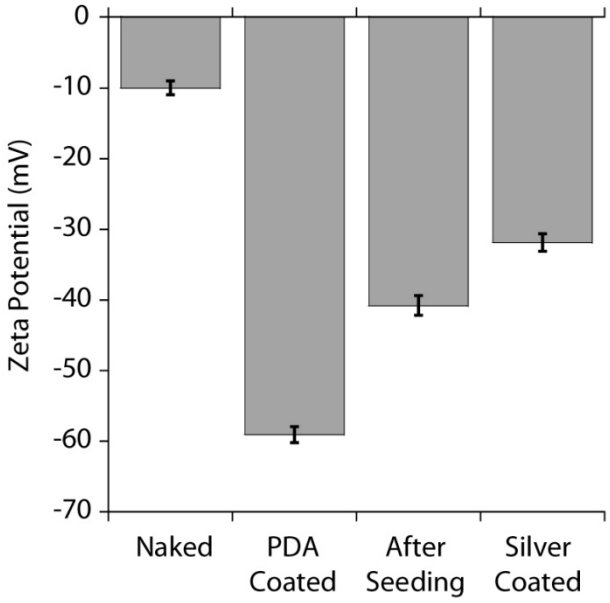

Figure S 1: Zeta potential of the droplets for each fabrication step, measured in a Tris buffer (pH=8.5, 20mM, 0.2%w/w Tween 20). The bare soybean oil droplets are slightly negatively charged, and the surface potential decreases to -60 mV after the deposition of the polydopamine layer. The strong negative charge makes possible the adsorption of Ag^+ cations at the surface, and the formation of the silver layer. At the end of the coating process, the surface potential of the droplets stays very negative, insuring a good electrostatic stability.

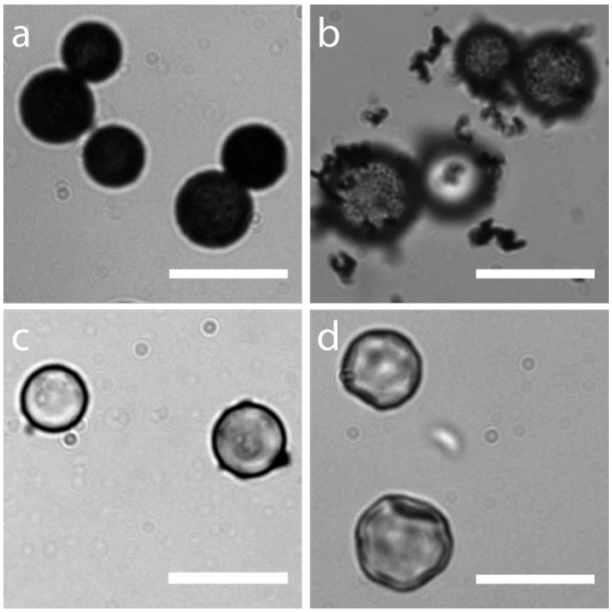

Figure S 2: Brightfield microscopy images of metalized droplets for different preparation conditions. (a,c,d) different reducing agents and (b) a different polydopamine polymerization condition. (b) During the polydopamine deposition step, no permanganate is used and the dopamine oxidation takes place with the dissolved dioxygen solely. (c,d) The silver coating steps are done with 1.5 eq. of silver nitrate (c) and ascorbic acid (d) in a Tris buffer supplemented with PVP (0.02%w/w) and Tween 20 (0.2%w/w).

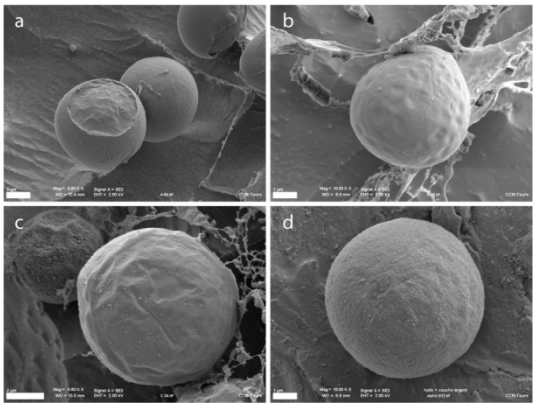

Figure S 3: Cryo-SEM images of (a) bare emulsion droplets, (b) polydopamine-coated droplets, (c) droplets after the seeding step and (d) silver-coated droplets. We observe clearly the wrinkling of the surface in the case (b) and (c). Scalebar : 2 μm (a) and (c); 1 μm (b) and (d).

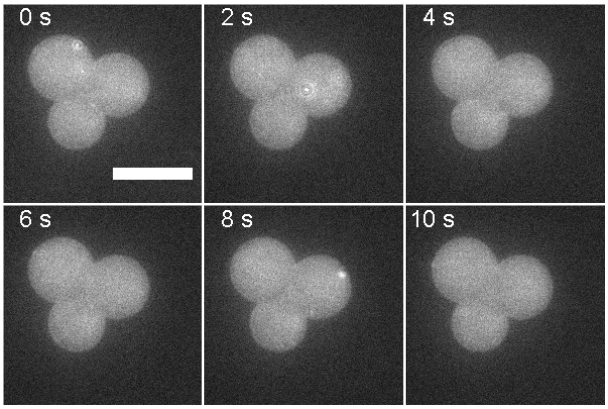

Figure S 4: Time-lapse recording of the blinking phenomena observed for the silver-coated droplets under constant illumination. Scalebar : 10 μm.

METHODS

Zetametry: The zeta potentials of the particles were recorded on a Nanosizer ZS zetasizer (Malvern Instruments, Malvern, Worcestershire, UK).