Supporting Information

S1 - SAXS data of templating microemulsions

The SAXS measurements were performed on a SAXSess high-flux small-angle X-ray scattering instrument (Anton Paar, Austria), attached to a PW3830 X-ray generator (PANalytical) with a sealed-tube anode (Cu Kα wavelength of 0.1542 nm). The generator was operated at 40 kV and 50 mA. The SAXSess camera was equipped with a line collimator block and all measurements were performed at vacuum conditions for an intense and monochromatic primary beam with low background. A semitransparent beam stop was used to enable the measurements of an attenuated primary beam for the exact definition of the zero scattering vector and transmission correction. Vacuum-tight refillable quartz capillaries (1 mm diameter, sample volume ≤ 100 μL) were used in order to determine the size and shape of the w/o- microemulsion containing the metal salts and the reducing agent. All experiments were performed at T_{wefb}. The sample temperature was controlled with a thermostatted sample holder unit (TCS 120, Anton Paar). The 2-D scattered intensities were recorded on a CCD detector (Princeton Instruments) and were converted via SAXSQuant software (Anton Paar) to one dimensional scattering curves as a function of the magnitude of the scattering vector $q = (4\pi/\lambda)\sin(\theta/2)$, where θ is the total scattering angle. All intensities were transmission-calibrated by normalizing the attenuated primary intensity at q = 0 to unity and were corrected the background scattering from the capillary and the solvent (octane).

SAXS was used in order to measure the diameter of the w/o- microemulsions containing 13 mM of H_2PtCl_6 + 13 mM of $Pb(NO_3)_2$, 13 mM of H_2PtCl_6 + 13 mM of $Bi(NO_3)_3$ and 320 mM of $NaBH_4$ at T_{wefb}. The droplet diameter of the w/o- microemulsion containing the metal salts and the reducing agent are presented in Table A1. In Figure A1 the scattering curves of w/o- microemulsions are presented in a double logarithmic plot. In all samples, an initial slope of zero was observed indicating that the w/o- microemulsions have a globular shape. The diameter of the droplets was determined by Guinier extrapolation (extrapolation to zero angle, q = 0.06 – 0.4 nm^{-1}) assuming that the droplets are homogeneous spheres.

Table S1. Diameter of the w/o-microemulsions at w_A = 0.08 containing the metal salts and the reducing agent determined by SAXS.

Metal Salts	w/o- microemulsion diameter / nm
13 mM H_2PtCl_6 : 13 mM $Pb(NO_3)_2$	26.2 ± 1.0
13 mM H_2PtCl_6 : 13 mM $Bi(NO_3)_3$	26.5 ± 1.0
320 mM $NaBH_4$	25.0 ± 1.0

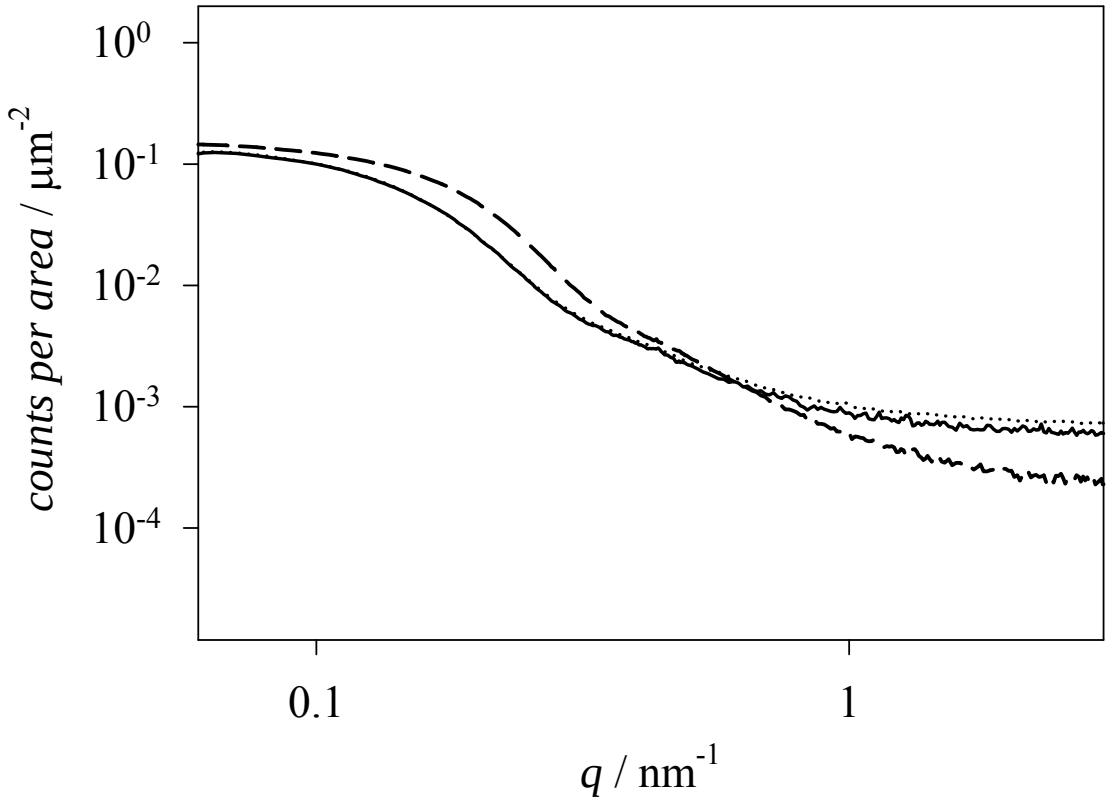

Figure S1. (a) SAXS curves of the w/o- microemulsion containing (···)13 mM H_2PtCl_6 : 13 mM $Pb(NO_3)_2$, (–)13 mM H_2PtCl_6 : 13 mM $Bi(NO_3)_3$ and (– –) 320 mM $NaBH_4$ at w_A = 0.08.

S2 - EDX analysis

Table S2. EDX analysis of the atomic composition of samples 1a, 1b, 1c, 1d, 1e (s. Table 1).

Sample 1a / nm^2	Pt:Pb atomic ratio	Sample 1b / nm^2	Pt:Pb atomic ratio	Sample 1c / nm^2	Pt:Pb atomic ratio
20	12 : 88	5	9 : 91	100	55 : 45
20	72 : 28	200	65 : 35	10	72: 28
200					
20	68 : 32	10	20 : 80	20	63 : 37
5	74 : 26	10	70 : 30	20	73 : 27
20	69 : 31	20	59 : 41	10	62 : 38
20	66 : 34			15	66 : 34
				50	9: 91

Sample 1d / nm^2	Pt:Pb atomic ratio	Sample 1e / nm^2	Pt:Pb atomic ratio
100	55 : 45	10	50 : 50
10	57 : 43	15	50 : 50
20	65 : 35	5	39 : 61
20	63 : 37	10	59 : 41
10	65 : 35	10	61 : 38
15	66 : 34	20	52 : 48
20	64 : 36	20	50 : 50
50	5 : 95	30	61 : 38
		20	47 : 53
		20	48 : 52
		20	40 : 60
		50	5 : 95

Table S3. EDX analysis of the atomic composition of samples 2a, 2b and 2c (s. Table 1).

Sample 2a / nm^2	**Pt:Bi atomic ratio**	**Sample 2b / nm^2**	**Pt:Bi atomic ratio**	**Sample 2c / nm^2**	**Pt:Bi atomic ratio**
10	81 : 19	10	46 : 54	20	40 : 60
10	75 : 25	10	50 : 50	10	21 : 79
10	87 : 13	20	56 : 44	15	38 : 62
10	85 : 15	5	49 : 51	8	43 : 57
10	87 : 13	10	52 : 48	20	64 : 36
20	81 : 19	20	47 : 53	10	60 : 40
20	63 : 37	20	50 : 50	15	43 : 57
10	86 : 14	3	50 : 50	10	64 : 36
5	90 : 10			10	59 : 41