Supporting information

Direct synthesis of PEG-encapsulated gold nanoparticles using branched copolymer nanoreactors

Iain E. Dunlop[a,], Mary P. Ryan[a], Angela E. Goode [a], Carlos Schuster [a], Nicholas J. Terrill[b] and Jonathan V.M. Weaver[a,c+]*

[a] Department of Materials and [c] Department of Bioengineering, Imperial College London, Exhibition Road, London SW7 2AZ, U.K. [b] Diamond Light Source Ltd., Diamond House, Harwell Science and Innovation Campus, Chilton, Didcot, Oxfordshire, OX11 0DE, U.K.

+ Deceased.

Full fitting parameters for SAXS data

Full fitting parameters for fits shown in figures 5 and 6. Errors were determined by fitting to the maximum and minimum acceptable radius, with cooperative varying of the prefactor *scale* (proportional to volume factor) and the Schultz-distributed polydispersity index (σ / x_{mean}). The table below shows the best fit in bold, bracketed by the fits used to determine the errors. All fits use: Solvent s.l.d. 9.46 × 10^{-6} Å^{-1}, particle s.l.d. 1.23 × 10^{-4} Å^{-1}, background 2 × 10^{-5} arb. units. The X-ray dose given is the total cumulative dose received by the sample at the end of the measurement.

38% molar ratio $HAuCl_4$: DEAMA,* in situ *(with X-ray exposure)

Reaction time / hours	X-ray dose / (photons / mm²)	Mean particle radius / Å x_{mean}	Poly-dispersity (σ / x_{mean})	Scale
1.6	3.6	5	3.80E-09	0.9
		7	**3.70E-09**	**0.7**
		9	3.10E-09	0.6
1.9	7.2	9.5	4.80E-09	0.63
		11.5	**4.80E-09**	**0.53**
		13.5	4.50E-09	0.45
2.1	10.8	14	5.10E-09	0.48
		15	**5.00E-09**	**0.45**
		16	5.00E-09	0.4
2.4	14.4	15	5.40E-09	0.46
		16	**5.30E-09**	**0.42**
		17	5.20E-09	0.39
2.6	18.0	16.5	5.80E-09	0.43
		17.5	**6.00E-09**	**0.4**

		18.5	5.80E-09	0.37
3.1	25.4	20	6.60E-09	0.34
		18	**6.60E-09**	**0.4**
		17	6.80E-09	0.43
3.6	32.4	15	7.00E-09	0.56
		17	**7.00E-09**	**0.47**
		19	6.50E-09	0.4
4.2	39.6	17		
		15	**6.90E-09**	**0.63**
		13	7.10E-09	0.73
4.7	46.8	18	7.50E-09	0.56
		16	**7.50E-09**	**0.63**
		15	7.50E-09	0.66
5.7	61.2	17	7.80E-09	0.58
		15	**8.00E-09**	**0.66**
		13	8.00E-09	0.74
6.9	79.2	16	8.20E-09	0.56
		17	**8.00E-09**	**0.53**
		18	8.00E-09	0.49
9.0	108.0	17	8.00E-09	0.52
		19	**8.00E-09**	**0.47**
		21	8.00E-09	0.4
12.6	115.2	19	8.50E-09	0.45
		21	**8.30E-09**	**0.4**
		23	8.30E-09	0.33
18.7	122.4	21	6.00E-09	0.46
		17	**6.20E-09**	**0.57**
		13	6.80E-09	0.72

19% molar ratio $HAuCl_4$: DEAMA, in situ (with X-ray exposure)

Reaction time / hours	**X-ray dose**	**Mean particle radius x_{mean}**	**Poly-dispersity (σ / x_{mean})**	**Scale**
12.6	115.2	23	7.30E-10	0.6
		21	**7.50E-10**	**0.67**
		19	7.70E-10	0.7
18.7	122.4	31	2.10E-09	0.5
		29	**2.10E-09**	**0.55**
		27	2.10E-09	0.59

38% molar ratio $HAuCl_4$: DEAMA,* ex situ *(without X-ray exposure)

Reaction time / hours	**Mean particle radius x_{mean}**	**Poly-dispersity (σ / x_{mean})**	**Scale**
11.1	21	2.10E-09	0.55
	19	**2.20E-09**	**0.6**
	15	2.35E-09	0.8
19.4	33	5.50E-09	0.38
	31	**5.50E-09**	**0.42**
	29	5.50E-09	0.46

19% molar ratio $HAuCl_4$: DEAMA,* ex situ *(without X-ray exposure)

Reaction time / hours	**Mean particle radius x_{mean}**	**Poly-dispersity (σ / x_{mean})**	**Scale**
11.1	23	7.30E-10	0.6
	21	**7.50E-10**	**0.67**
	19	7.70E-10	0.7
19.4	31	2.10E-09	0.5
	29	**2.10E-09**	**0.55**
	27	2.10E-09	0.59

TEM image from Fig 1: full field of view

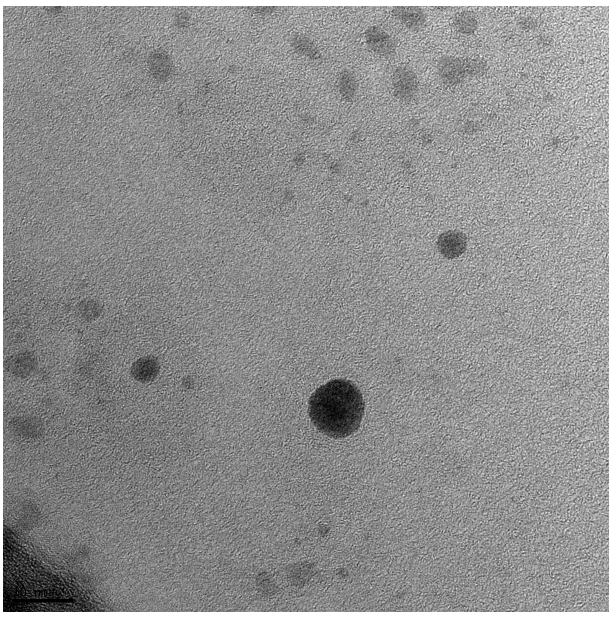

Fig S.1. TEM Image of gold nanoparticles template by branched copolymers. Same image as Fig 1, showing full field of view.