Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

How persistent microbubbles shield nanoparticle productivity in laser synthesis of colloids - quantification of their volume, dwell dynamics, and gas composition

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These supporting information provide additional information on the laser-induced persistent bubbles.

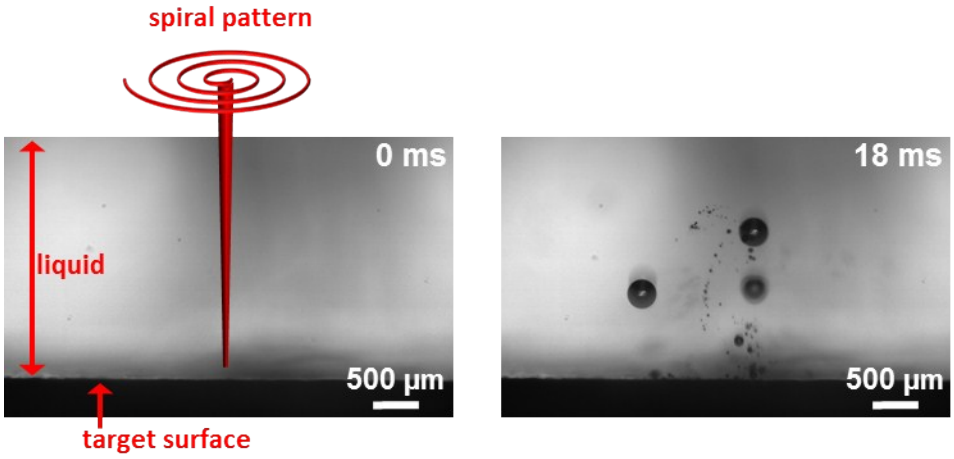

Fig. S1 Formation of two fractions of persistent bubbles in isopropanol after the impact of one single laser pulse on a gold target.

Fig. S1 demonstrates that even a single laser pulse leads to the formation of persistent bubbles in two different size regimes. The sinlge pulse experiment was performed in isopropanol using an Nd:YAG ns-laser (Innolas SpitLight DPSS250-100) at a wavelength of 1064 nm and a pulse length of 9 ns. The laser beam with a spot diameter of 4 mm was directed unfocused on the gold target. A statistical analysis of the bubble diameters leads to an average bubble diameter of 27±6 µm for the smaller fraction and 296±7 µm for the bigger fraction.

The mass-weighted particle size distributions are shown in Fig. S2

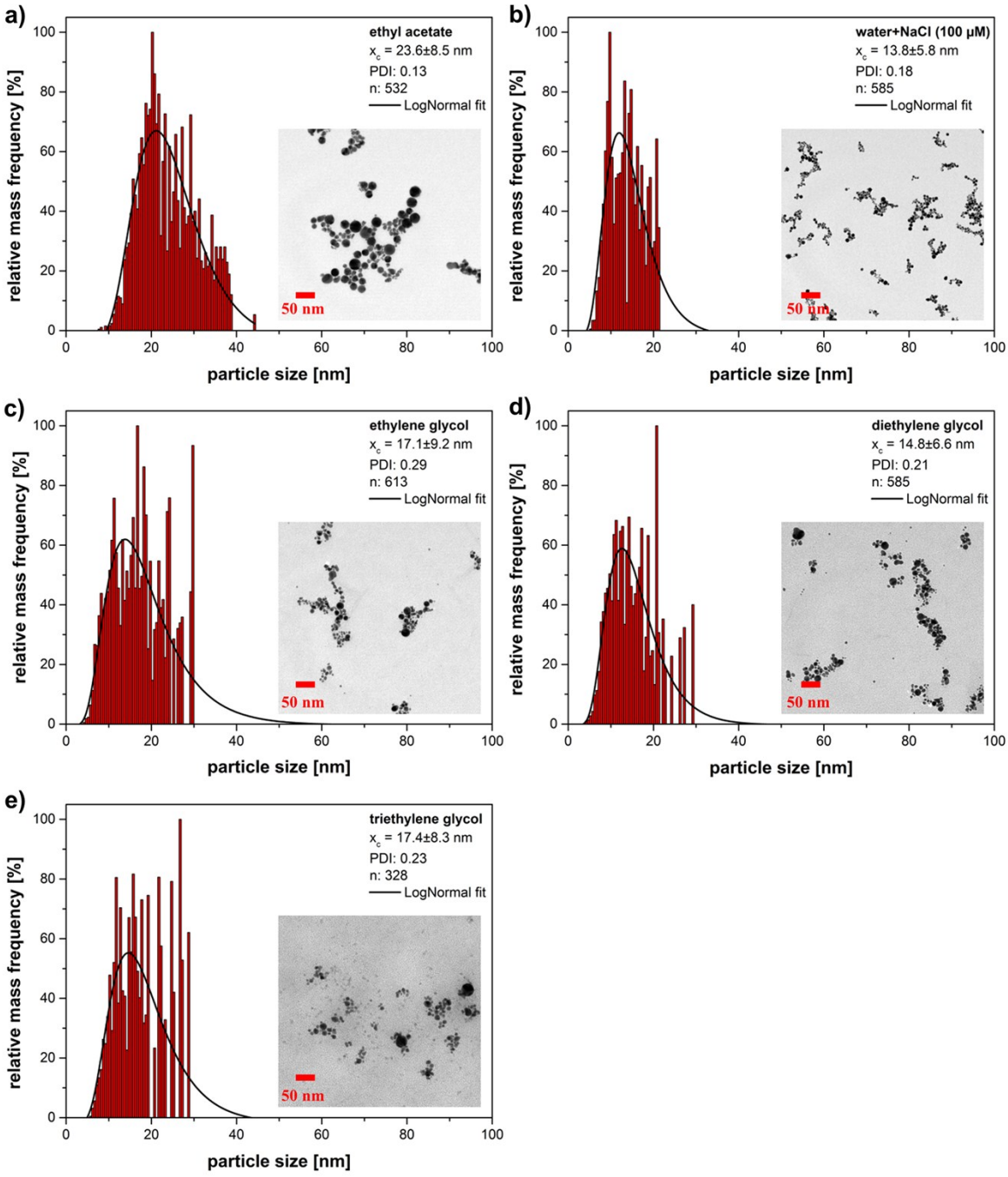

Fig. S2 Mass-weighted size histograms and representative TEM images of Au NPs synthesized in ethyl acetate (a), water (b), ethylene glycol (c), diethylene glycol (d) and triethylene glycol (e).

Tab. S1 summarized the most important liquid properties:

Table S1: Liquid parameters of the liquids used in Fig. 8 at a temperature of 293.15 K and a pressure of 1 atm.[1-3]

	EtAc	H_2O	MEG	DEG	TEG
viscosity [mPa·s]	0.44	0.89	21.00	36.80	48.10
surface tension [N/m]	0.024	0.073	0.048	0.048	0.045
vapor pressure [hPa]	98.3	23.4	0.053	0.008	0.003
boiling point [K]	350	373	470	517	564
density [g·cm^{-3}]	0.894	0.998	1.1	1.12	1.12

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