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

Supporting Information

Monophasic ligand-free alloy nanoparticle synthesis determinants during pulsed laser ablation of bulk alloy and consolidated microparticles in water†

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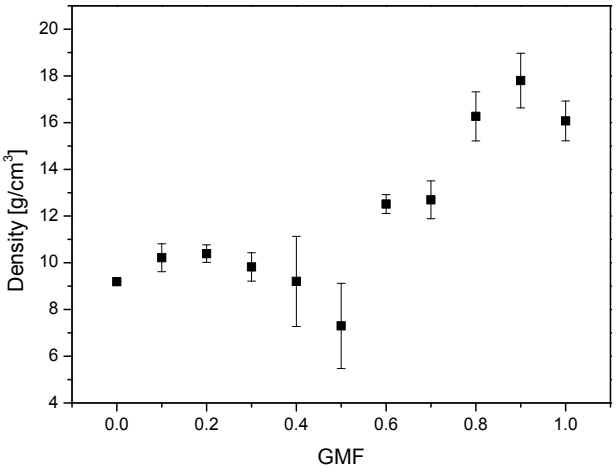

Fig. S1. Density of bulk alloy

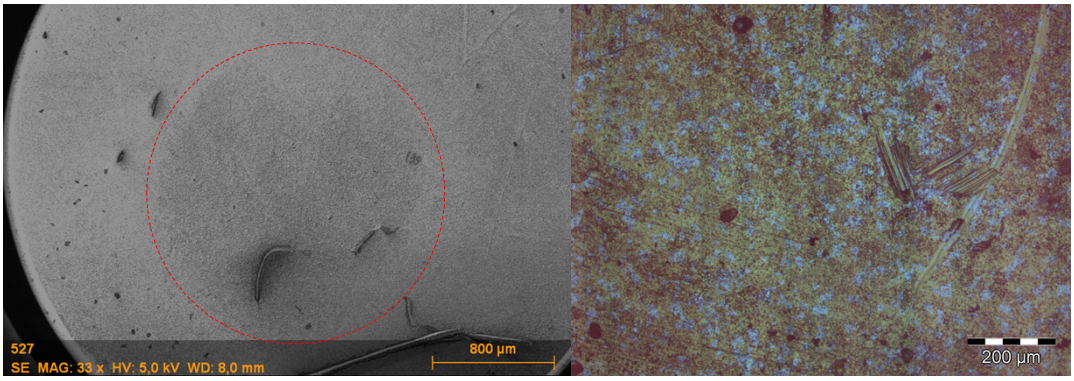

Fig. S2: SEM micrograph (SEM: Jeol JSM-7500 F) of laser spot (left, 60 s and 6000 pulses) and digital microscope image of pressed micro powder target (GMF 0.8)

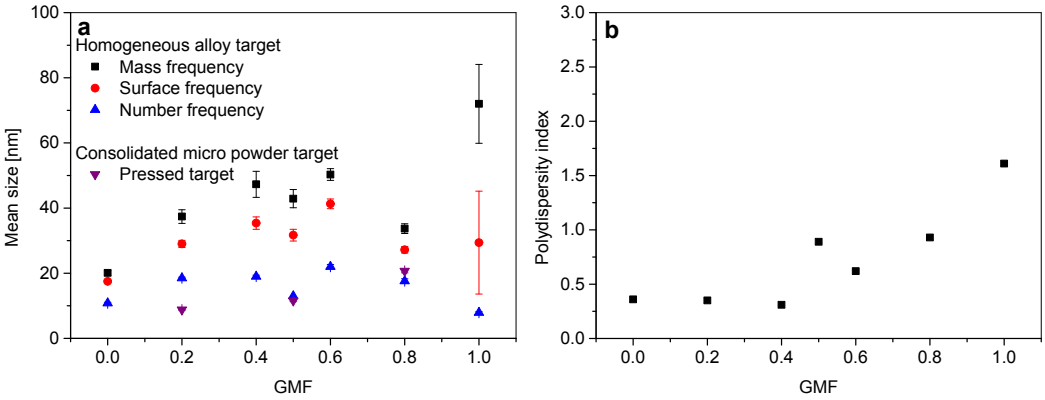

Fig. S3. a) Mass, surface and number frequency of nanoparticles generated by PLAL b) polydispersity index of number-weighted particle size as a function of the gold molar fraction (GMF)

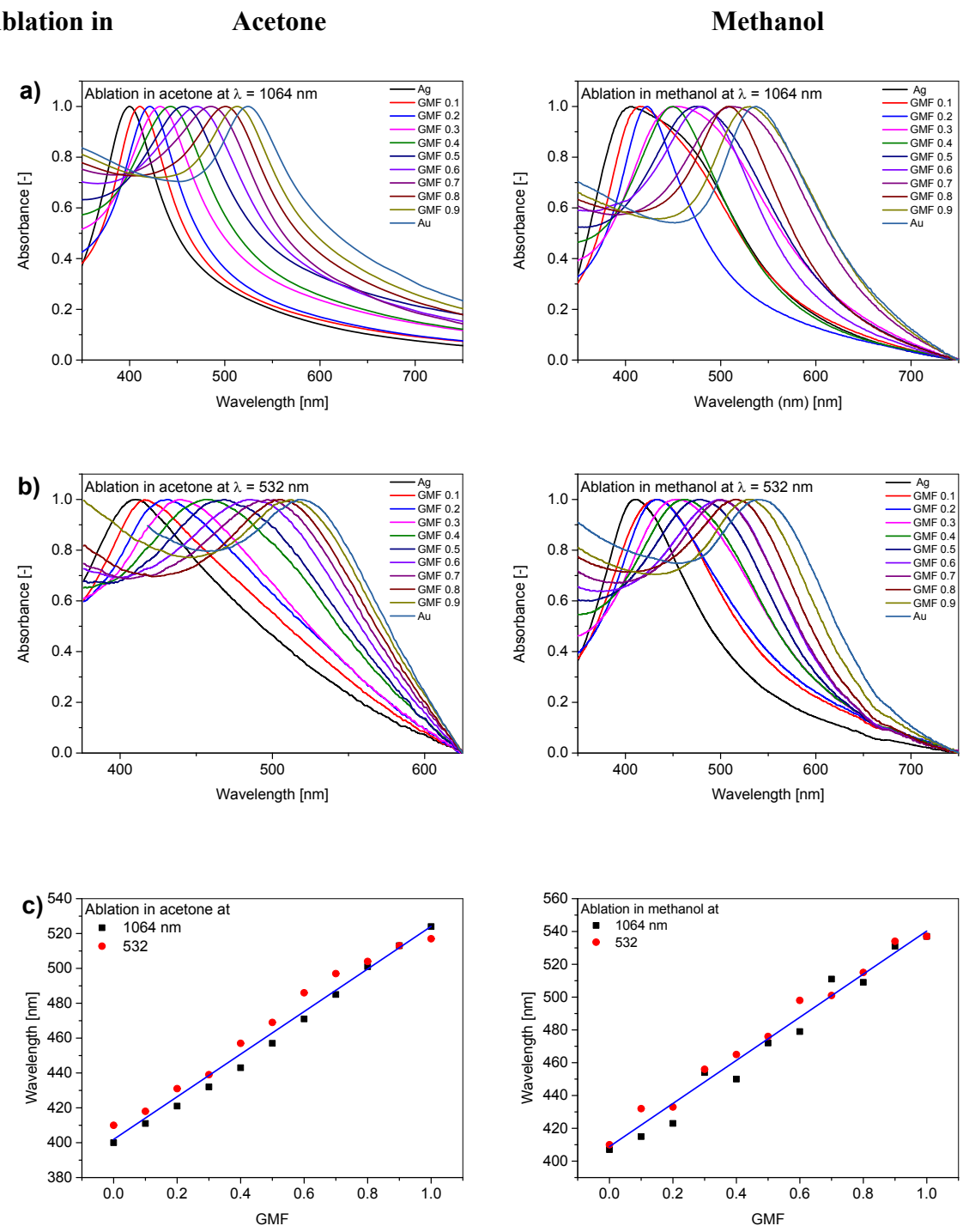

Fig. S4. PLAL of bulk alloy targets in acetone (left) and methanol (right) causes homogeneous alloy NP formation a) Peak-normalized UV-Vis spectra of colloids generated at wavelength of 1064 nm b) Peak-normalized UV-Vis spectra of colloids generated at second harmonic (532 nm) c) Wavelength of surface plasmon resonance peak of Ag-Au nanoparticle colloids as function of GMF

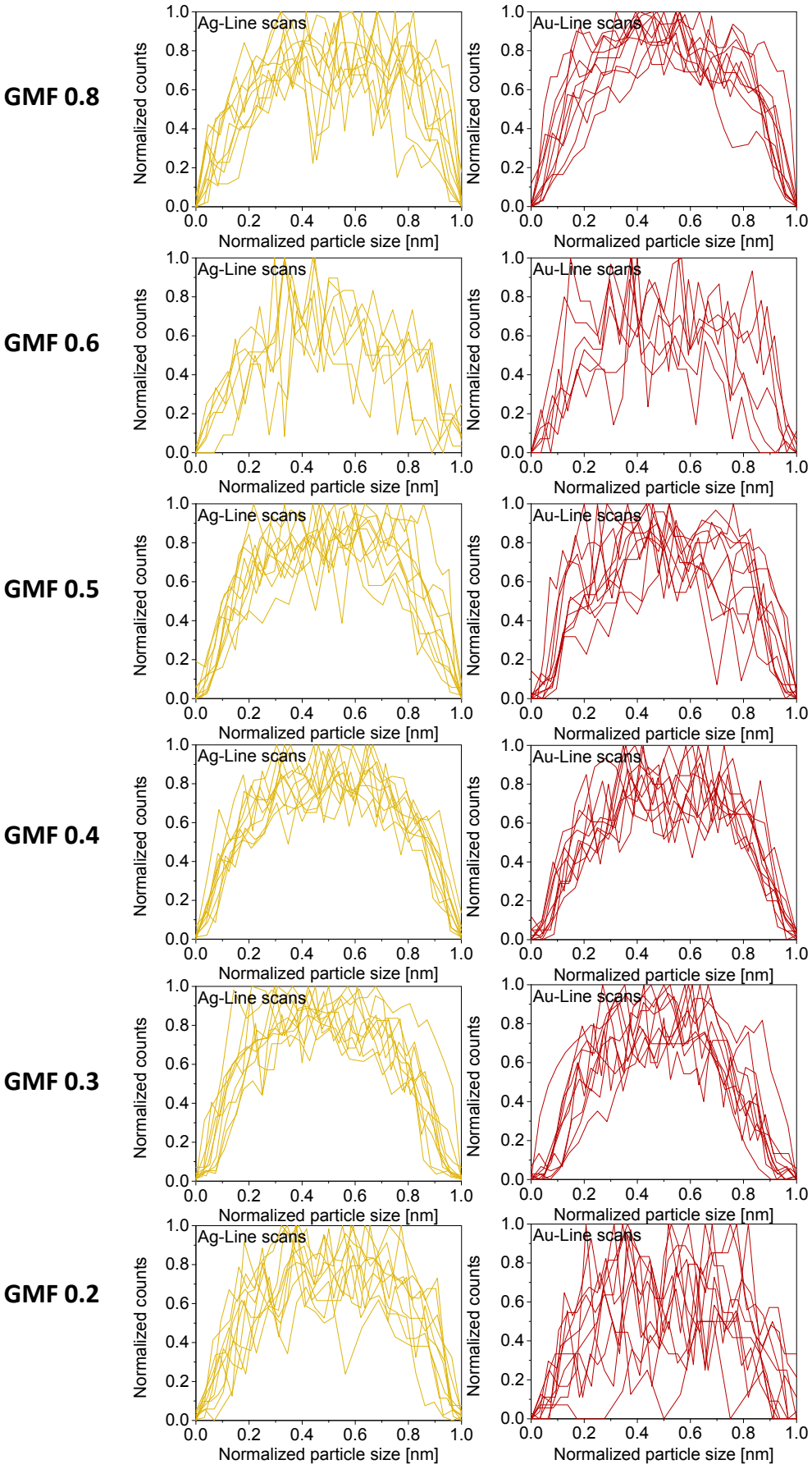

Fig. S5. Normalized TEM-EDX line scan measurements for ten nanoparticles generated from bulk alloy targets with different GMF by nanosecond laser ablation in pure water

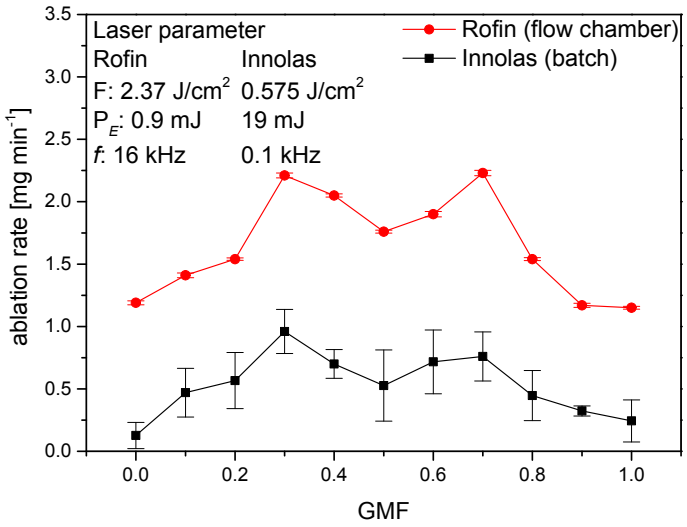

Fig. S6. Ablation rate of Au-Ag bulk alloy for two nanosecond laser ablation systems with similar laser power (Rofin: 20 W, Innolas: 25 W), but different laser (Rofin: pulse energy: 0.9 mJ, repetitions rate: 16 kHz; Innolas: pulse energy: 19 mJ, repetitions rate: 0.1 kHz) and liquid (flow and batch chamber) parameters. Not that the density of the bulk depends on GMF (Figure S2) and shows a minimum at GMF 0.5.