

SUPPORTING INFORMATION

**Site-specific deposition of single gold nanoparticles by individual growth in electrohydrodynamically-printed attoliter droplet reactors**

Julian Schneider, Patrik Rohner, Patrick Galliker, Shyamprasad N. Raja, Ying Pan, Manish K. Tiwari, Dimos Poulikakos\*

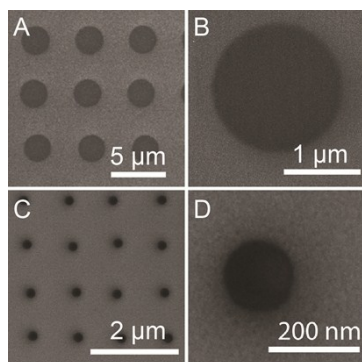


Fig. S1. Comparison of plasma cleaned and FDTS coated substrates. (A,B) Oxygen plasma cleaned substrates are highly wetting and lead to thin polymeric film deposits. Upon annealing, no coalescence and particle formation takes place. (C,D) The substrates coated with FDTS have low surface energies and hence high contact angles. The sessile droplets retract into small spherical caps during vaporization, enabling nucleus formation and nanoparticle growth during thermal annealing.

---

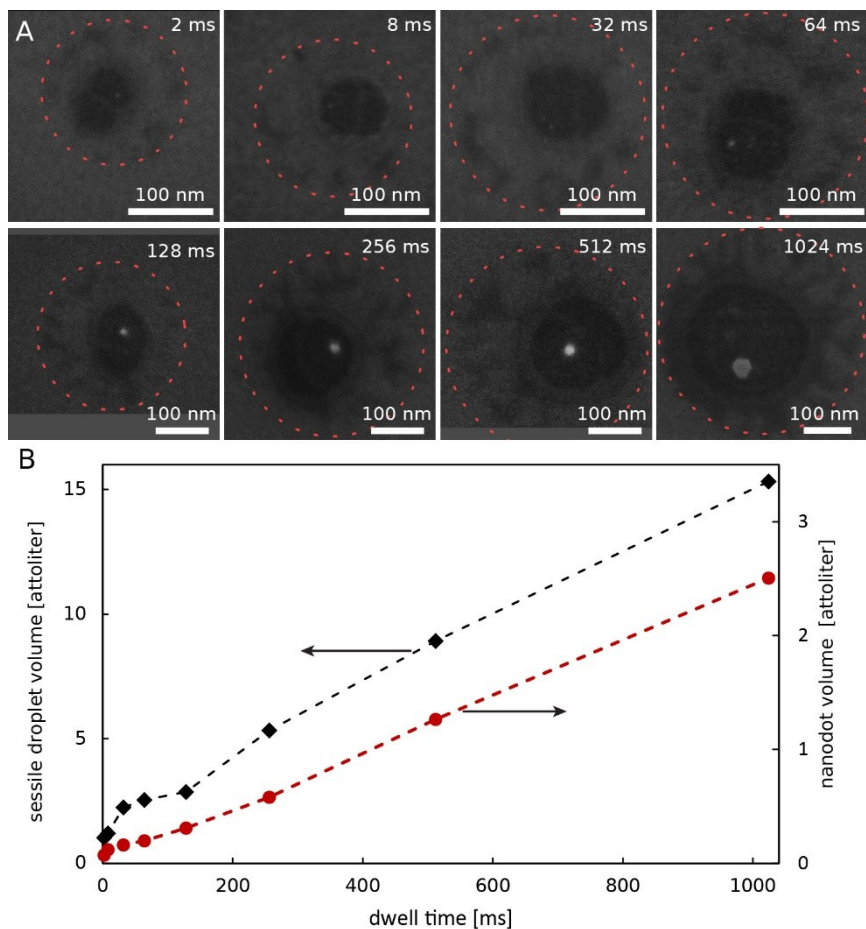


Fig. S2. Sessile droplet size dependence on dwell time. (A) The maximal diameter of the sessile droplet can be estimated from the faint remaining footprint (red circle) around the dried copolymer nanodot. (B) The maximal sessile droplet volume is calculated from the measured diameter assuming a contact angle of  $75^\circ$  (macroscopic equilibrium contact angle) and shown in dependence of the printing dwell time. The nanodot volume is extracted from AFM and SEM micrographs. The initial step increase in volume due to the higher ink concentration at the beginning of the printing actuation is visible for sessile droplet as well as nanodot. The plateau region is only visible for the sessile droplet. The sessile droplet volume as well as copolymer concentration increase linearly for longer dwell times.

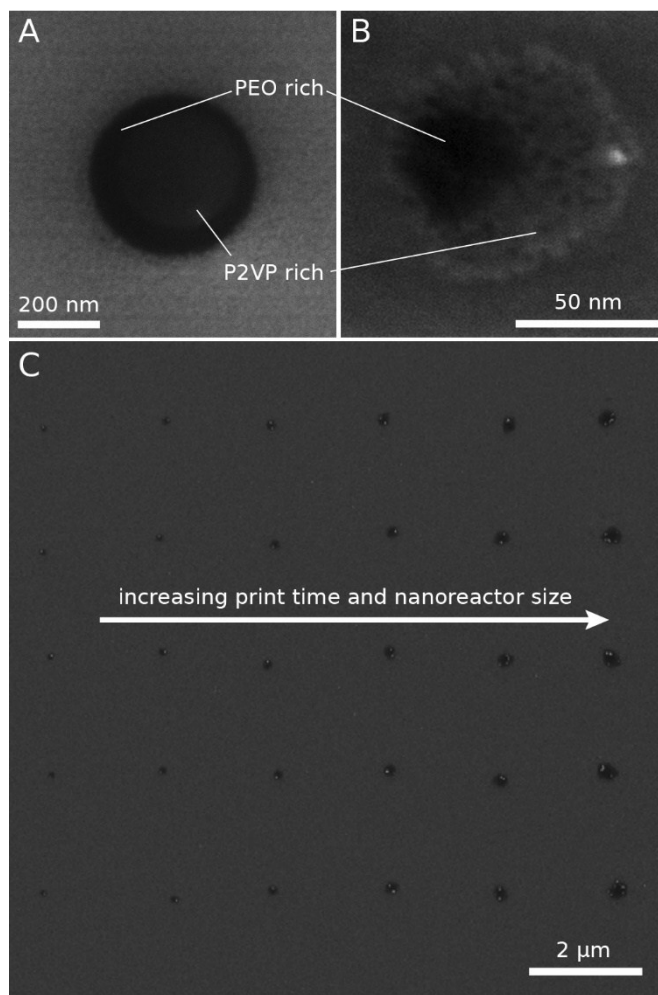


Fig. S3. (A) Phase separation into PEO rich and P2VP rich domains after printing. (B) 4-5 nm Au particle inside polymer cap after thermal annealing. (C) Array with increasing dwell time and nanoreactor size (left to right). Multiple particles formed in the larger nanoreactors after annealing at 150 and 220 °C.