Supporting Information

Shape-transformable Liquid Metal Nanoparticles in Aqueous Solution

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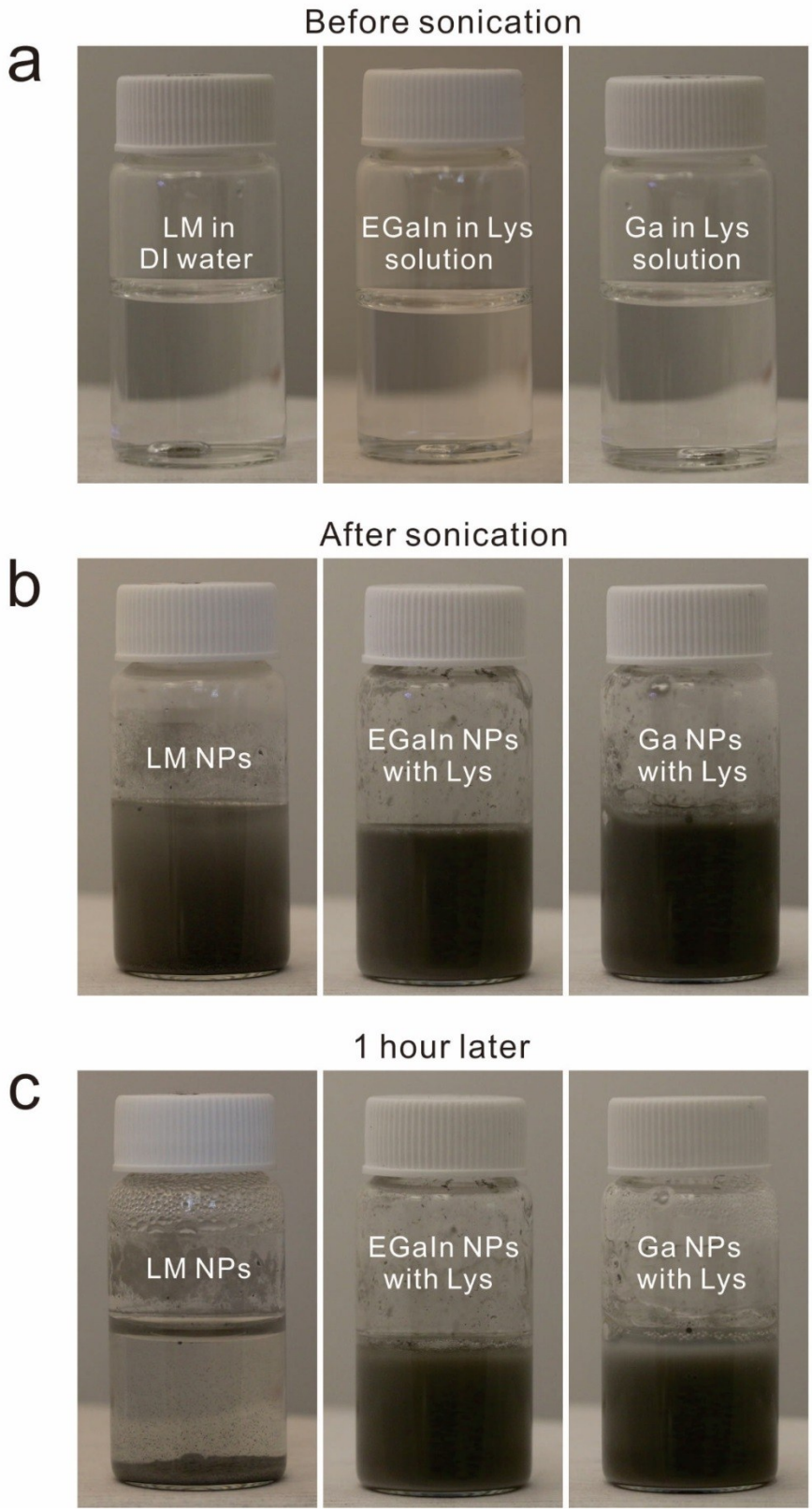

Figure S1. Liquid metal sonication in an aqueous solution. (a) Liquid metal in an aqueous solution with/without Lysozyme (Lys) before sonication. (b) Liquid metal in an aqueous solution with/without Lys immediately after sonication. (c) Liquid metal in an aqueous solution with/without Lys after sonication and settling for one hour. The volume of the vial is 20 mL.

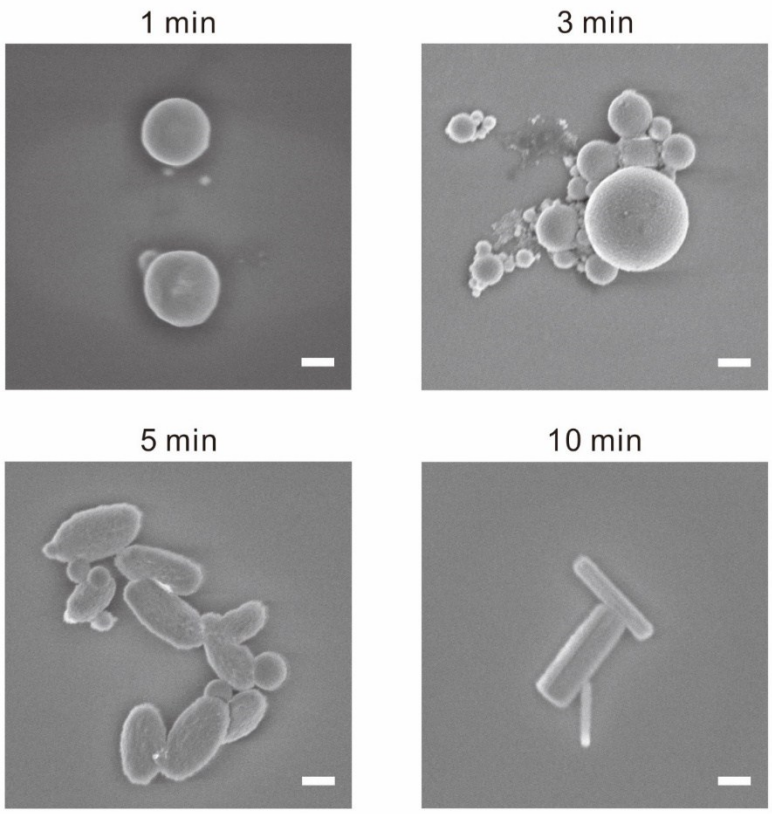

Figure S2. Morphology transition as a function of sonication time explored by scanning electron microscopy. (a) Liquid metal particles obtained after 1 min sonication with Lys. (b) Liquid metal particles obtained after 3 min sonication with Lys. (c) A transition from sphere to rod, obtained after 5 min sonication with Lys. (d) Rods obtained after 10 min sonication with Lys. The scale bars are 500 nm.

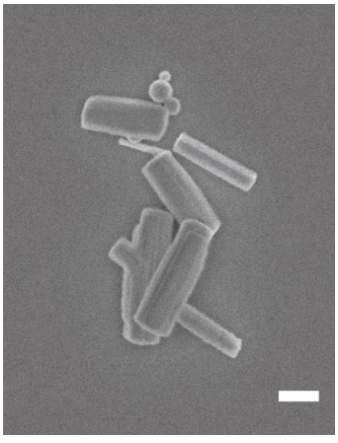

Figure S3. SEM micrographs of the rods in the foam that forms above the liquid during sonication. The scale bar is 200 nm.

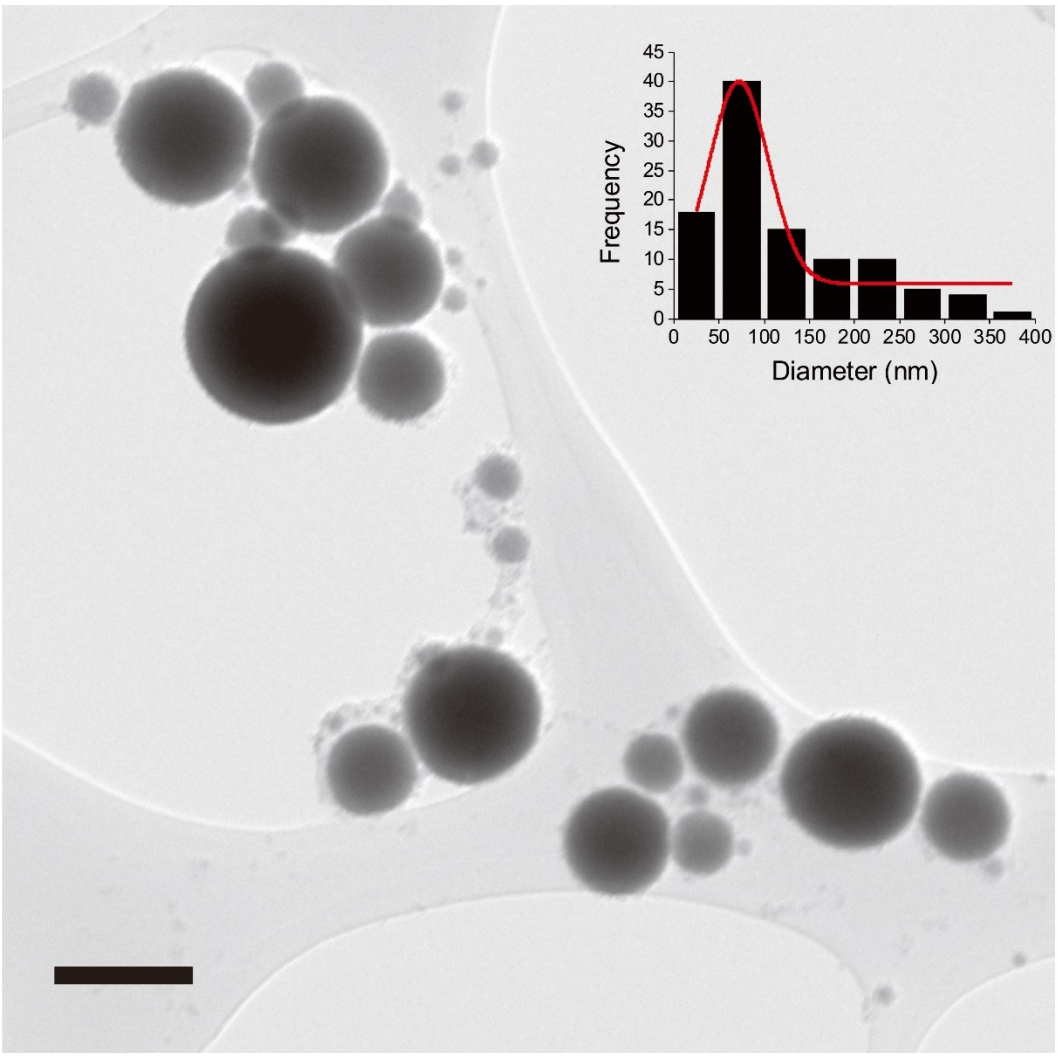

Figure S4. TEM micrographs of the nanoparticles obtain from sonicating liquid metal in ice bath. The size distribution plot is calculated from more than 100 particles with Gauss fit. The scale bar is 100 nm.

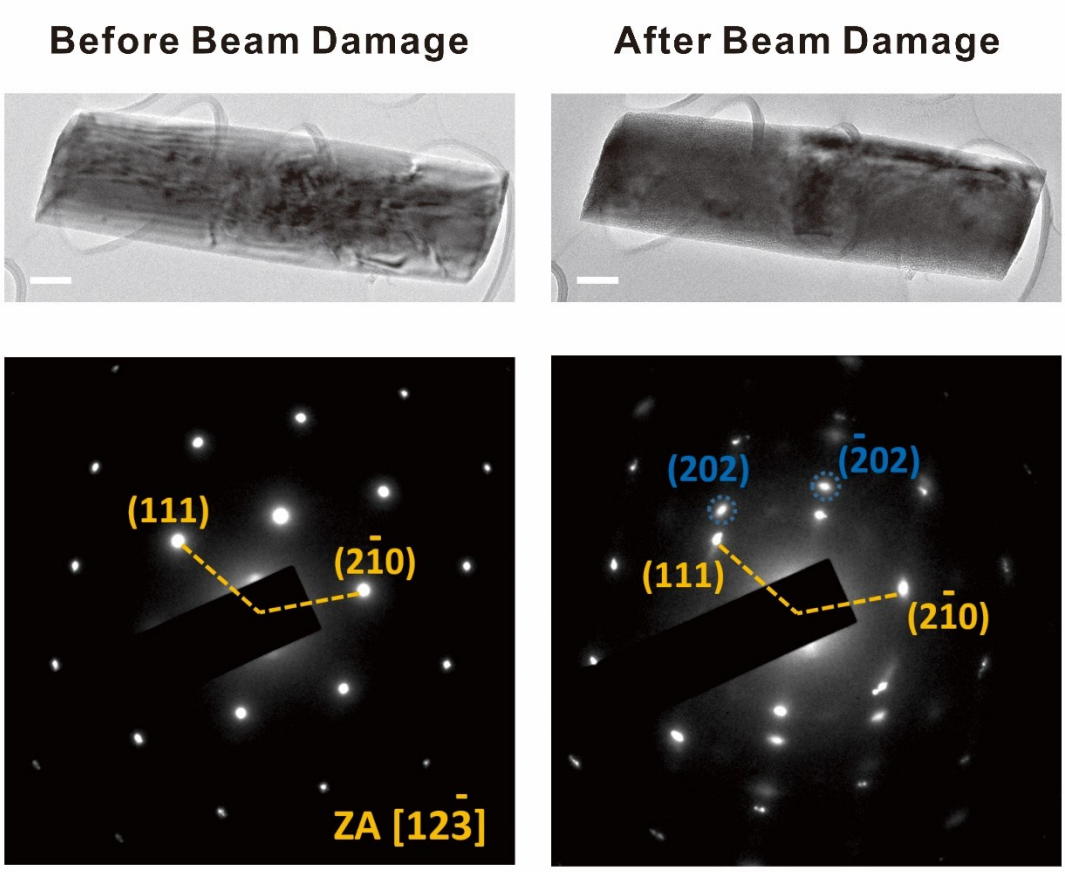

Figure S5. Characterization of GaOOH rods before and after beam damage. Scale bars are 100 nm.

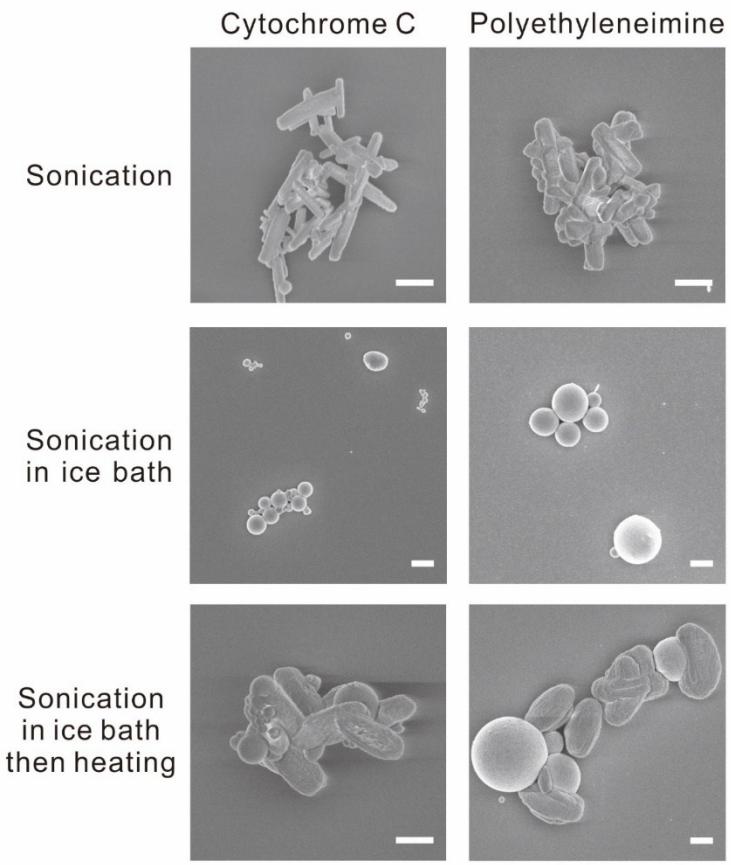

Figure S6. Morphology of liquid metal particles in the presence of different positively-charged surfactants including Cytochrome C (from equine heart) and polyethyleneimine. The scale bars are 500 nm.

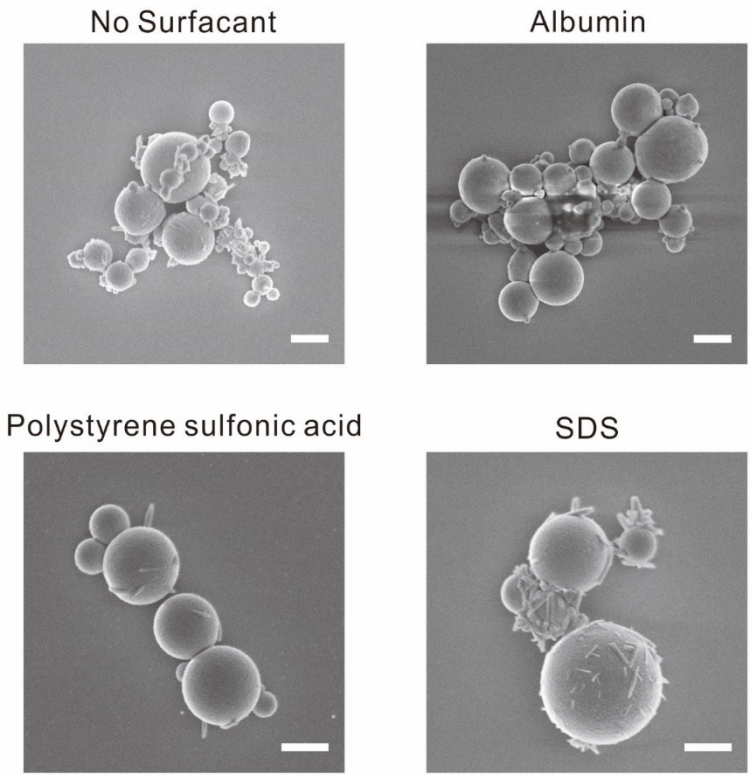

Figure S7. Morphology of liquid metal particles in the absence of surfactants or the presence of different negatively-charged surfactants, including: albumin, polystyrene sulfonic acid, sodium dodecyl sulfate (SDS). The scale bars are 500 nm.

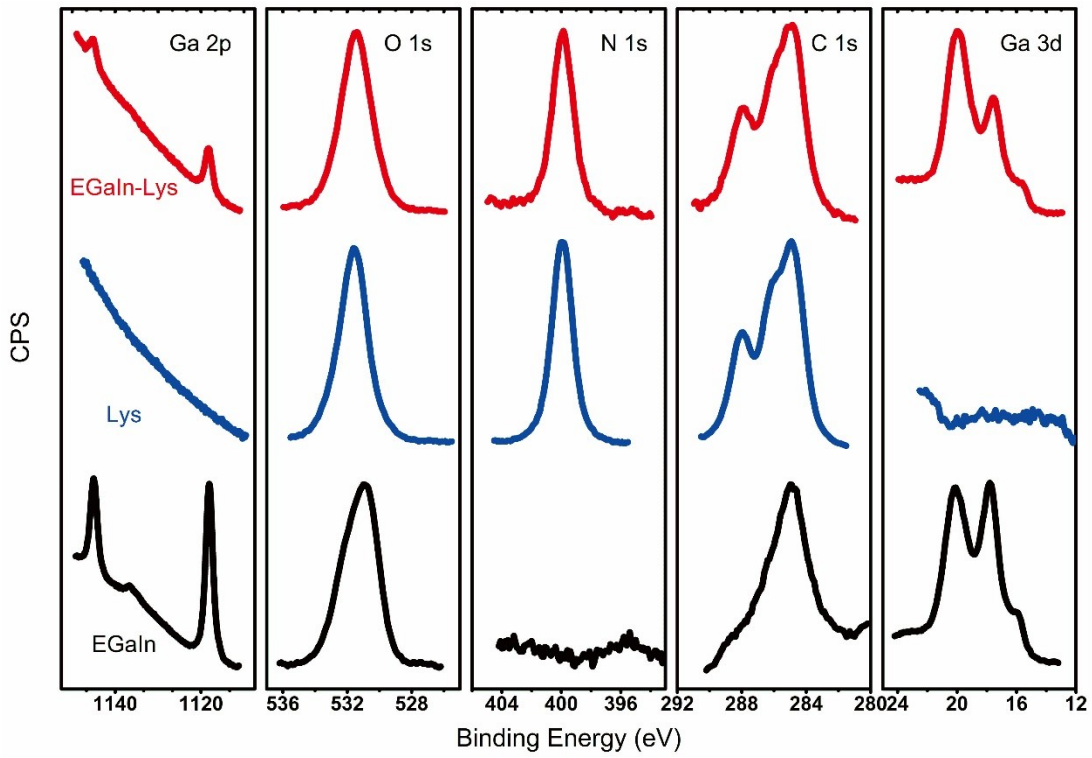

Figure S8. XPS spectrum of 1) EGaIn thin film on silicon wafer, 2) lysozyme on silicon wafer and 3) lysozyme on EGaIn thin film, yet rinse with DI water multiple times, attempting to remove the lysozyme.

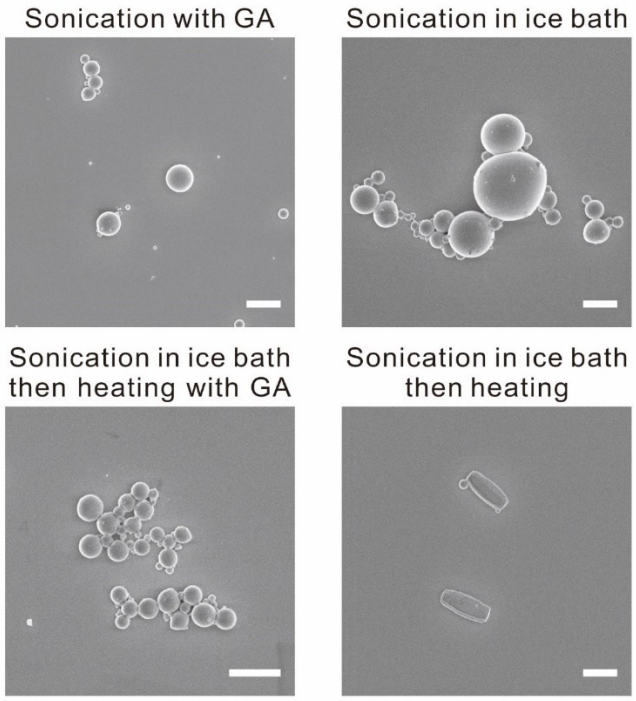

Figure S9. Characterization of liquid metal particles with the presence of Lys and glutaraldehyde (GA) during sonication or post-heating process. Scale bars are 1 μm.