Abstract Submitted
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Formation of nanoparticle-coated liquid metal droplets and measurement of their electronic properties.[1] KAN DU, C. KNUTSON, RUI HONG, M. TUOMINEN, T. EMRICK, T. RUSSELL, A. DINSMORE, University of Massachusetts Amherst — We form stable droplets of molten metal, investigate their stability, and demonstrate their potential for forming electronic devices. Droplets of liquid Ga, 0.1-100 microns in diameter, were stabilized by surfactants and by insulating, conducting, and semiconducting nanoparticles. We investigate electronic transport through the nanoparticle-coated droplets. Here we use silica, gold and CdSe nanoparticles which spontaneously form a layer on the droplets. A few droplets form junctions between two platinum wires; we apply a bias voltage to the wires and measure the current before and after evaporation of the solvent. Improved understanding of the electrical characteristics may allow inexpensive assembly of a large number of devices with controlled size, symmetry and function. We acknowledge support from the Center for UMass/Industry Research on Polymers (CUMIRP).

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