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Connecting the Nanodots: Programmable Nanofabrication of Fused Metal Shapes on DNA Templates MAURICIO PILO-PAIS, SARAH GOLDBERG, ENRIQUE SAMANO, HENOK MEBRAHTU, Duke University, THOMAS LABEAN, North Carolina State University, GLEB FINKELSTEIN, Duke University — We present a novel method for producing complex metallic nanostructures of programmable design. DNA origami templates, modified to have DNA binding sites with a uniquely coded sequence, were adsorbed onto silicon dioxide substrates. Gold nanoparticles functionalized with the cDNA sequence were then attached. These seed nanoparticles were later enlarged, and even fused, by electroless deposition of silver. Using this method, we constructed a variety of metallic structures, including rings, pairs of bars, and H shapes. Due to the flexibility of the design these structures may offer great promise for electronic and plasmonic applications.

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