

359e Formation of Nanowires Networks Using Sequential Magnetic Alignment Method

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Nanowires and nanotubes have been considered as the best candidates for building blocks which can be used for the bottom-up assembly of integrated high-density nanoelectronic and nanophotonic devices. Successful integrated nanodevices would not merely be constructed with simple circuit elements but also strongly demanded complicate local interconnections to achieve signal passing through between device elements. Therefore, developing integrated nanosystem utilizing the diverse properties of nanowires and nanotubes will require assembling these building blocks with a scalable and complex configuration as well as high reproducibility. Here we report a sequential magnetic alignment technique to make a complex network of ferromagnetic metal nanowires for integrated devices. The substrate was placed between two permanent magnets and the nanowires were dispersed on the substrate to place the first layer of nanowires. The complex structure was achieved by subsequent dropping of nanowire contained solution and rotating of the substrate with respect to the magnetic field direction. The quick and effective sequential alignment technique was demonstrated to have potential for assembly of complex networks without complicate lithographic technique.