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Controlling the Assembly of Nanorods Inside Electronic Devices[1]
DONG TRAN, HUGO ROMERO, ZONGHAI HU, MICHAEL FISCHBEIN[2], MARIJA DRNDIC[3], University of Pennsylvania — Semiconductor nanorods are versatile nanostructures with exceptional electrical and optical properties that can be exploited for their applications as functional nanoscale devices. The manipulation and assembly of nanorods inside electronic devices are crucial for the study and fabrication of nanoelectronics. Here we present a simple technique to align colloidal suspensions of CdSe nanorods across lithographically pre-patterned metal electrodes on silicon nitrite substrates by an ac electric field. We synthesized CdSe nanorods with diameters of a few nanometers by a conventional chemical technique and the assembly is characterized by AFM and TEM. We probed the nanorod assembly at different frequencies of the applied ac E-field.

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