

# Gold nanowire fabrication with lipid nanotubes

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The fabrication of conductive nanostructures is the key technology in semiconductor industry and has gained importance in biology for applications such as biosensors and drug delivery.

We have demonstrated a high-throughput approach to fabricate gold nanowires on surfaces with a lipid nanotube template. Biotin-tagged lipid nanotubes are formed from lipid blocks in inverted hexagonal phase adsorbed on polymer-coated surfaces upon application of shear force. Streptavidin-coated gold nanoparticles were attached to the biotin-tagged lipid nanotubes and gold nanoparticle-encapsulated LNTs were cross-linked by chemical fixation. Samples were dried and treated with oxygen plasma to remove the organic template and connect the particles. The created nanowires were characterized by cryo-transmission electron microscopy, atomic force microscopy and electrical measurements.