

Plasmonic strain sensors based on Au-TiO₂ thin films on flexible substrates

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1. Optical simulations with gold nanoparticles using nanoDDSCAT+

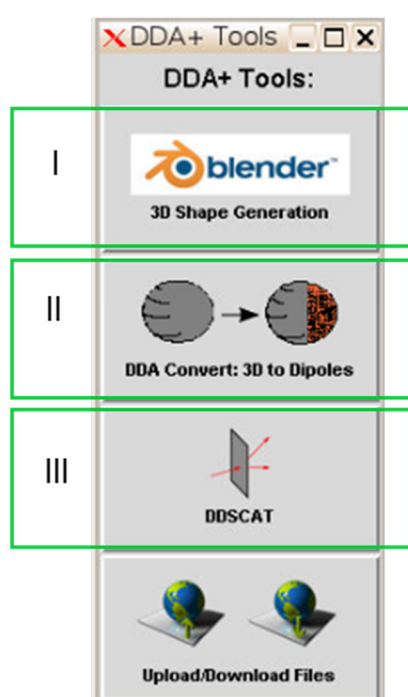


Figure S1. nanoDDSCAT+ software interface tools, freely available at “nanohub.org”. I - 3D shape generation (Blender tool); II - 3D shape to dipole conversion (DDA convert tool); III - Discrete dipole approximation code (DDSCAT tool).

2. Individual nanoparticles

2.1. LSPR Extinction Band for Nanoparticles of Different Shapes

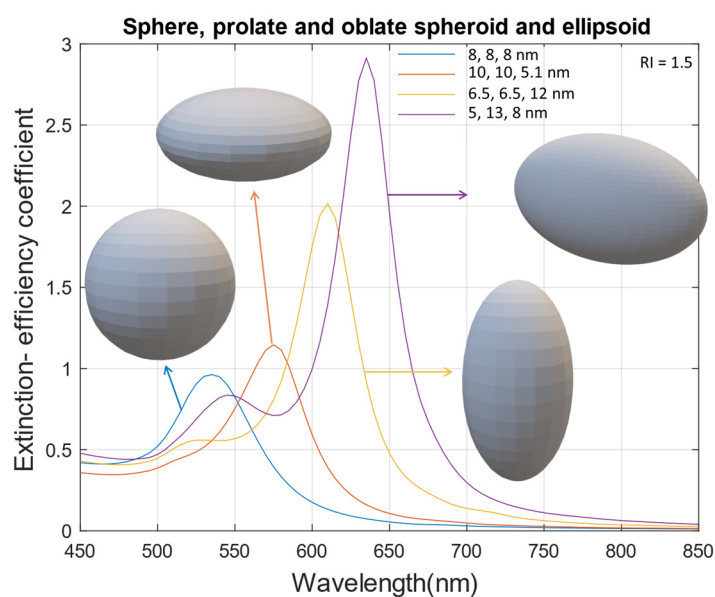


Figure S2. Optical extinction efficiency coefficient estimation of several shapes with nanoDDSCAT+

2.2. Compressing Single Nanoparticles

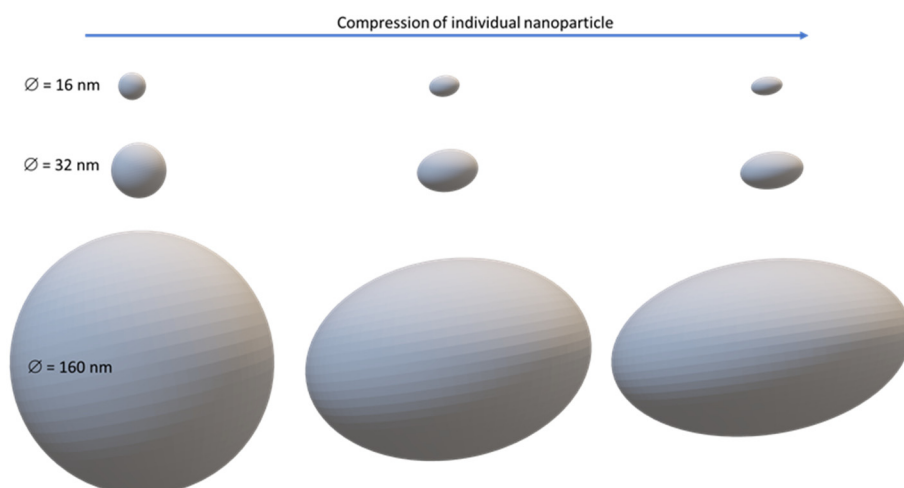


Figure S3. Nanoparticles being compressed change their aspect ratios ($AR = 1$, $AR = 1.4$ and $AR = 1.8$) but keep the same effective volume.

3. Elongation of a 2D nanoparticles network

3.1. Biaxial elongation of 16 nm gold nanoparticles network

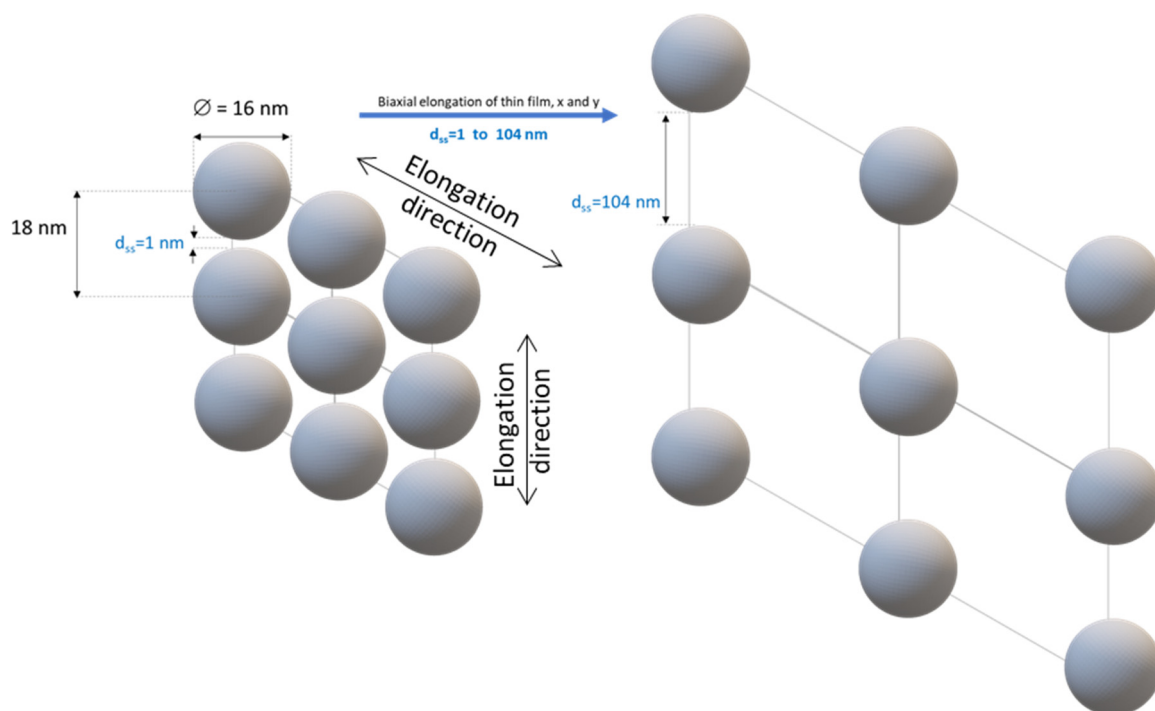


Figure S4. Array of 16 nm diameter nanoparticles being biaxially elongated

3.2. Uniaxial elongation of 16 nm gold nanoparticles network under different surrounding refractive indices.

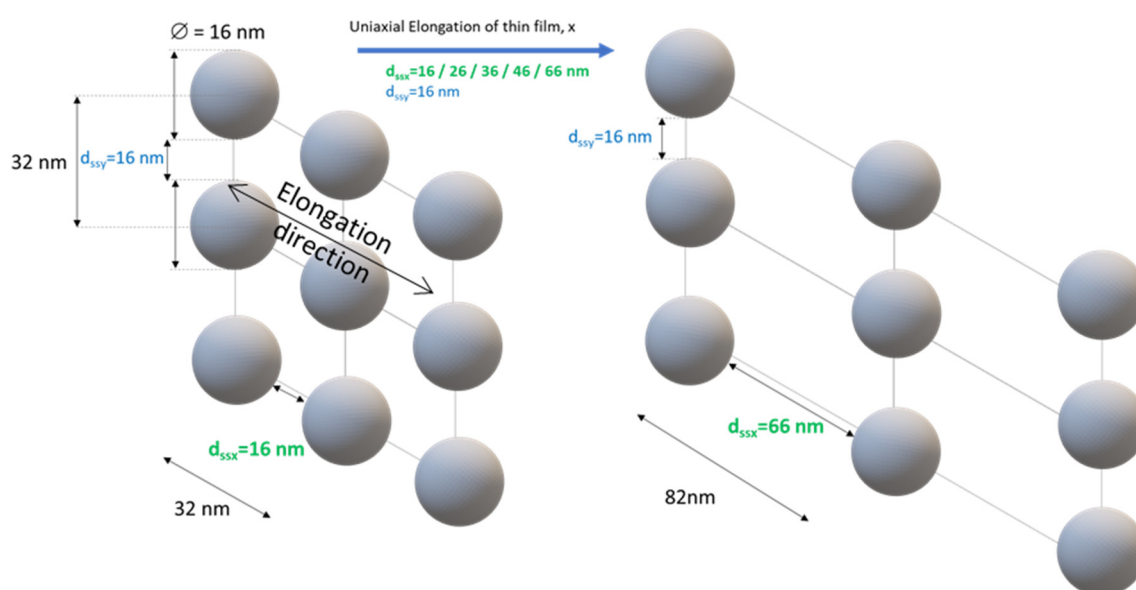


Figure S5. Array of 16 nm diameter nanoparticles being uniaxially elongated

3.3. Uniaxial elongation of 16 nm gold nanoparticles network with transverse compression.

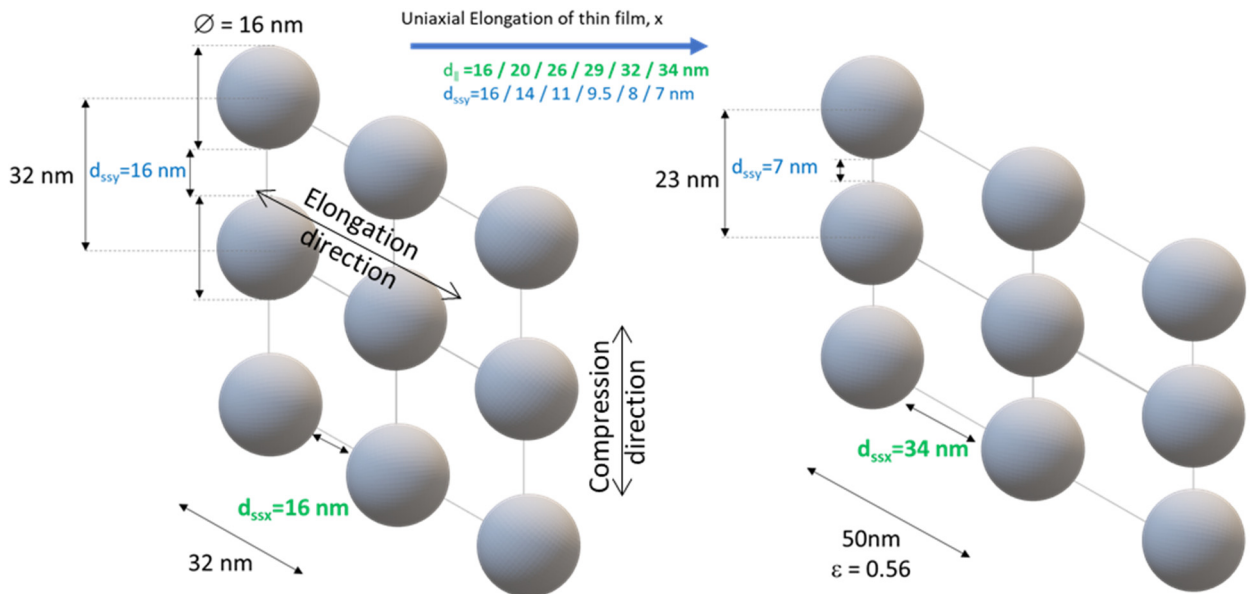


Figure S6. Array of 16 nm diameter nanoparticles being uniaxially elongated with transverse compression