

Supporting Material

Fluorescence-enhancing plasmonic silver nanostructures using azopolymer lithography

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1 Statistical analysis of the SEM images

The SEM images (Fig. S1(a) and Fig. S2(a)) were analyzed using ImageJ¹ software to obtain information about the average size and the diameter of the particles. The analysis was performed using color-based thresholding, which separates the particles from the surface based on the contrast difference (Fig. S1(b) and Fig. S2(b)). From this data the software calculated the areas for each particle. This data was used to determine the diameter for a particle as well as to calculate the standard-deviation for the particle diameter. The diameter histograms are shown in Fig. S1(c) and Fig. S2(c).

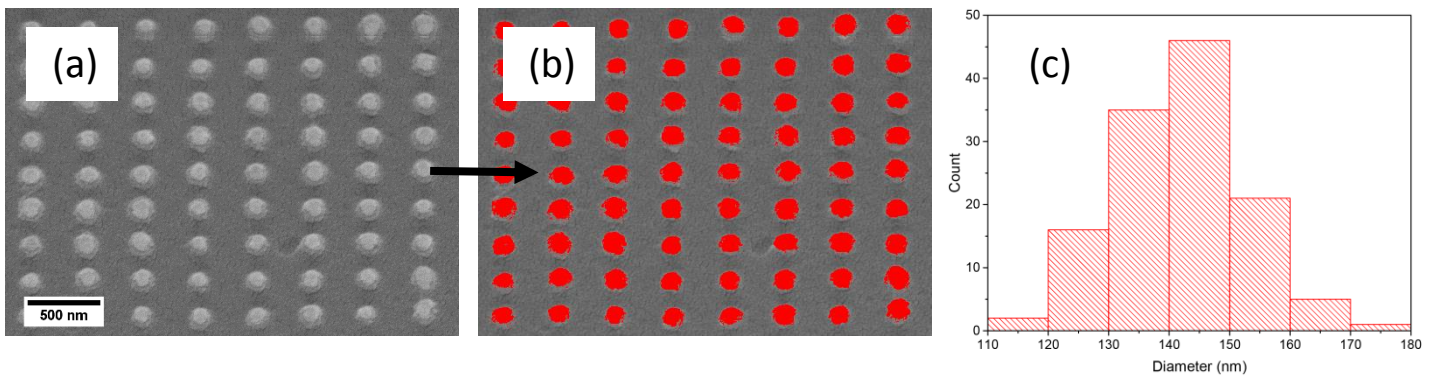


Fig S1. (a) The original SEM image, (b) contrast based thresholding of the silver nanoparticles and (c) particle diameter histograms obtained from the SEM data for $\Lambda=370$ nm grating.

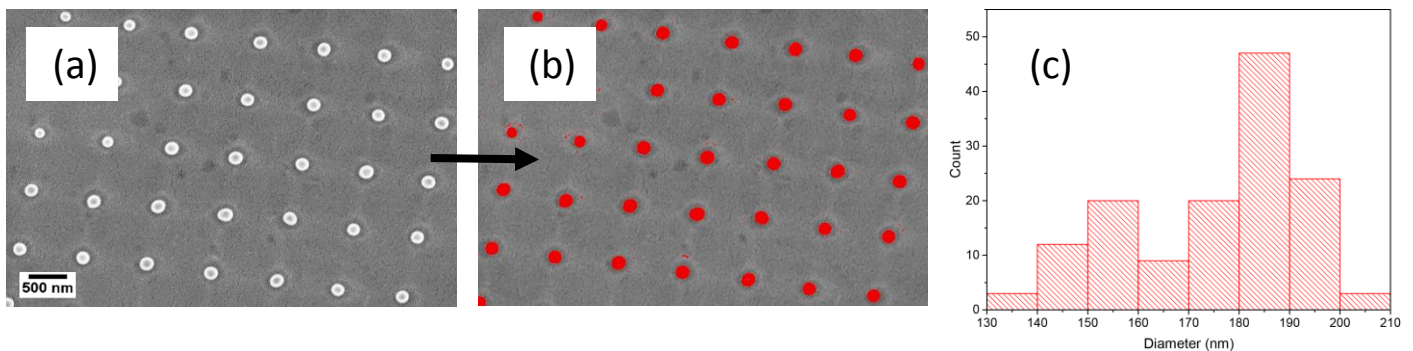


Fig S2. (a) The original SEM image, (b) contrast based thresholding of the silver nanoparticles and (c) particle diameter histograms obtained from the SEM data for $\Lambda=1$ μ m grating.

[1] ImageJ – <http://imagej.nih.gov/ij/>

2 The AFM data

The AFM height data was taken from Figure S2 (a) and (b) and analyzed using the Nanoscope Analysis (Bruker) software.

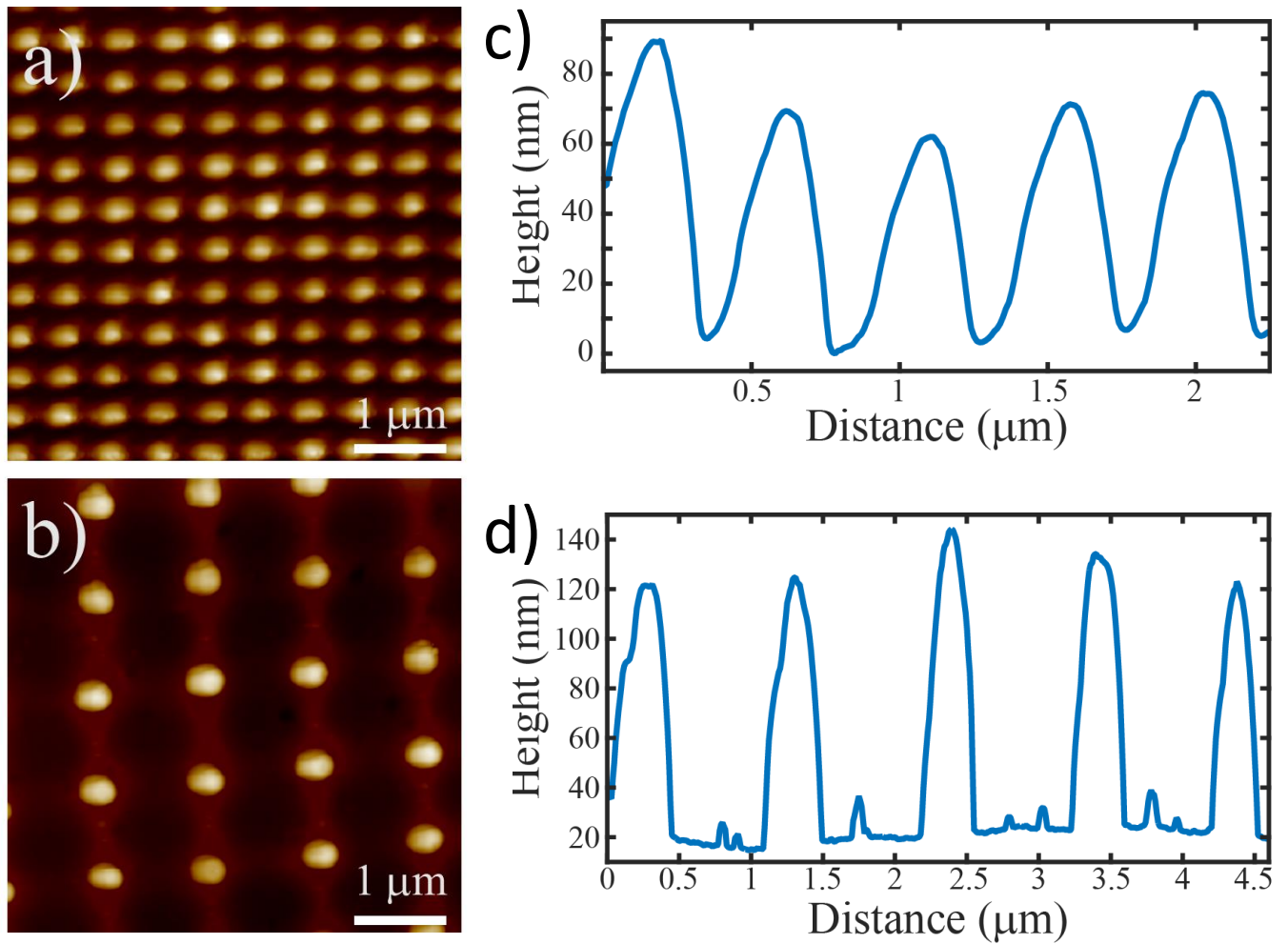


Fig S2. The measured AFM data for (a) $\Lambda = 370$ nm and (b) $\Lambda = 1$ μm samples after the ALD Al_2O_3 deposition. The corresponding height topography images for (c) $\Lambda = 370$ nm and (d) $\Lambda = 1$ μm gratings.

3 Statistical analysis of the confocal microscopy data

The image statistics were obtained using the Witec Project software that is incorporated within the microscope. The actual enhancement factors were calculated using the obtained averages for each image as in $EF = Ave/Ave_{ref}$.

Table 1. Image statistics for Fig. 4 (a) glass substrate coated with R6G

Parameter	Value
Number of pixels	80000
Area	250000 μm^2
Average	203.8 kHz
Standard Deviation	25.2 kHz
Min	128.9 kHz
Max	803.3 kHz

Table 2. Image statistics for Fig. 4 (b) 2D nanoparticle array ($\Lambda=370$ nm) coated with R6G

Parameter	Value
Number of pixels	80000
Area	250000 μm^2
Average	1167.7 kHz
Standard Deviation	49.5 kHz
Min	1000.2 kHz
Max	1328.7 kHz

Table 3. Image statistics for Fig. 4 (d) glass substrate coated with CB

Parameter	Value
Number of pixels	65536
Area	62500 μm^2
Average	9.2 kHz
Standard Deviation	1.3 kHz
Min	4.5 kHz
Max	15.3 kHz

Table 4. Image statistics for Fig. 4 (e) 2D nanoparticle ($\Lambda=1$ μm) array coated with CB

Parameter	Value
Number of pixels	65536
Area	62500 μm^2
Average	15.4 kHz
Standard Deviation	1.9 kHz
Min	11.5 kHz
Max	19 kHz