

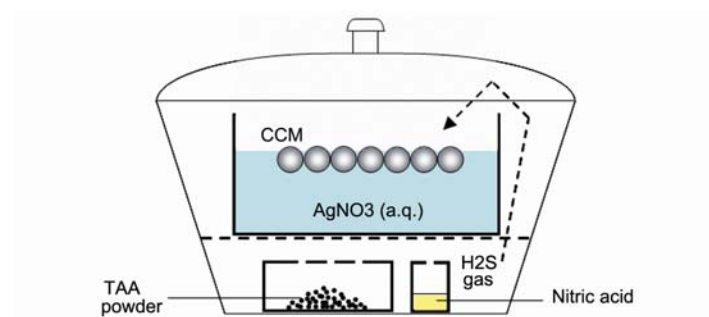
Nanosphere Lithography at the Gas/Liquid Interface: A General Approach towards Free-Standing High-Quality Nanonets

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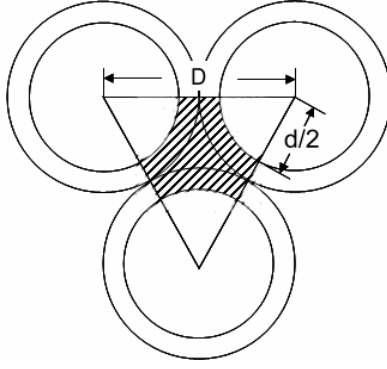
Supporting Information



Scheme S1. Schematic illustration of the experimental setup for the preparation of free-standing Ag_2S nanonets through gas/liquid reactions masked by floating CCMs.

Table S1. Summary of the experimental parameters.

Product	Ag_2S	PbS	Ag	CaCO_3
Colloidal spheres	PSt	PSt	P(St-MMA-AA)	PSt
Reactant subphase	AgNO_3 (0.010 M)	$\text{Pb}(\text{NO}_3)_2$ (0.20 M)	AgNO_3 (0.010 M)	CaCl_2 (0.020 M), poly (acrylic acid) ($M_w = 5100$, 80 mg/L)
Source for reactive gas	TAA (1.0 g), nitric acid (7 M, 1.5 mL)	TAA (1.0g), acetic acid (7 M, 1.5 mL)	Hydrazine (80%, 5.0 mL)	$(\text{NH}_4)_2\text{CO}_3$ powder (2.0 g)



Scheme S2. The volume fraction of Ag_2S in the nanonet thin films ($f_{\text{Ag}_2\text{S}}$) is estimated by dividing the shadowed area by the triangular area, which gives

$$f_{\text{Ag}_2\text{S}} = 1 - \frac{\sqrt{3}}{6} \pi \frac{d^2}{D^2}, \text{ where } D \text{ is the sphere diameter and } d \text{ is the hole diameter.}$$

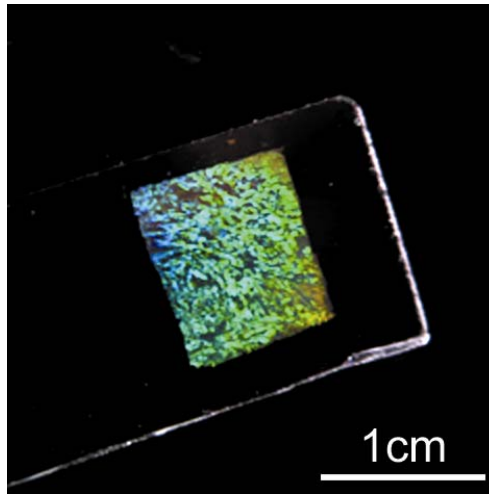


Figure S1. Optical photograph of a piece of Ag_2S nanonet suspended on a glass substrate showing a bright green color.

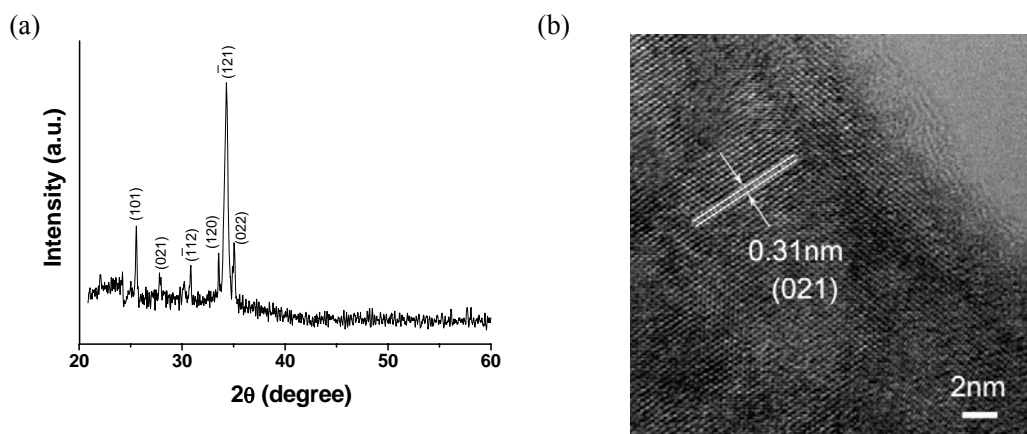


Figure S2. XRD pattern (a) and HRTEM image (b) of Ag₂S nanonets. The diffraction peaks are indexed to the acanthite structure of α -Ag₂S (JCPDS No. 89-3840).

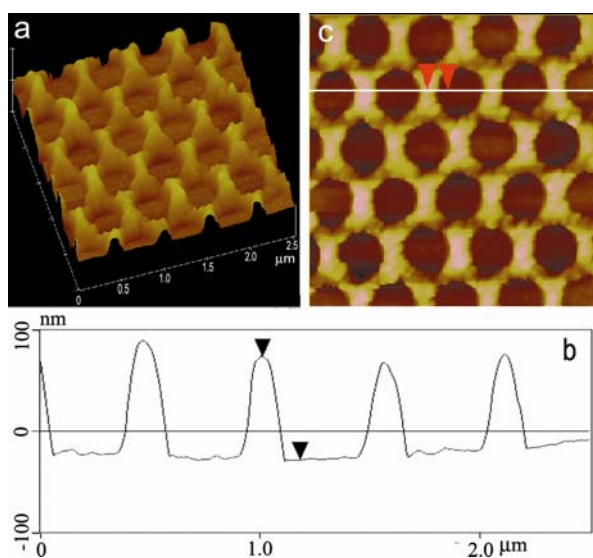


Figure S3. AFM image (a) and section analysis (b, c) of Ag₂S nanonets. The AFM images were acquired using a Nanoscope IV multimode atomic force microscope (Digital Instruments, Santa Barbara, USA) in tapping mode under ambient conditions.