

High-harmonic generation microscopy of nanostructured bulk, thin-film and 2D semiconductor materials: supplement

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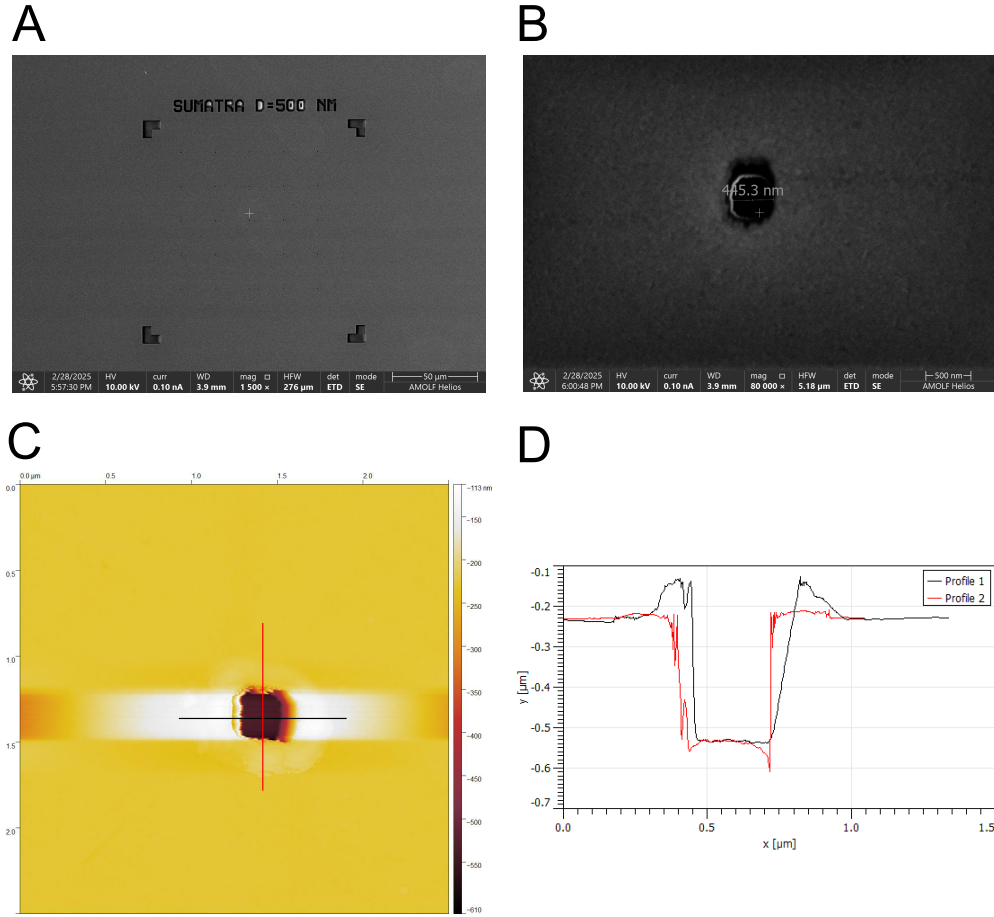


Fig. S1. Characterization of the hole-in-gold sample after focused ion beam milling. (A) Scanning electron microscopy image of an array of holes. (B) Scanning electron microscopy image of a single hole, with an estimated diameter of 450 nm. Both electron images were acquired with a standard Everhart-Thornley Detector. (C) Atomic force microscopy image of a single hole. Lineouts are indicated and are plotted in panel D. (D) Lineouts of the atomic force microscopy image, indicating that the holes have a diameter of roughly 350 nm and are roughly 300 nm deep.

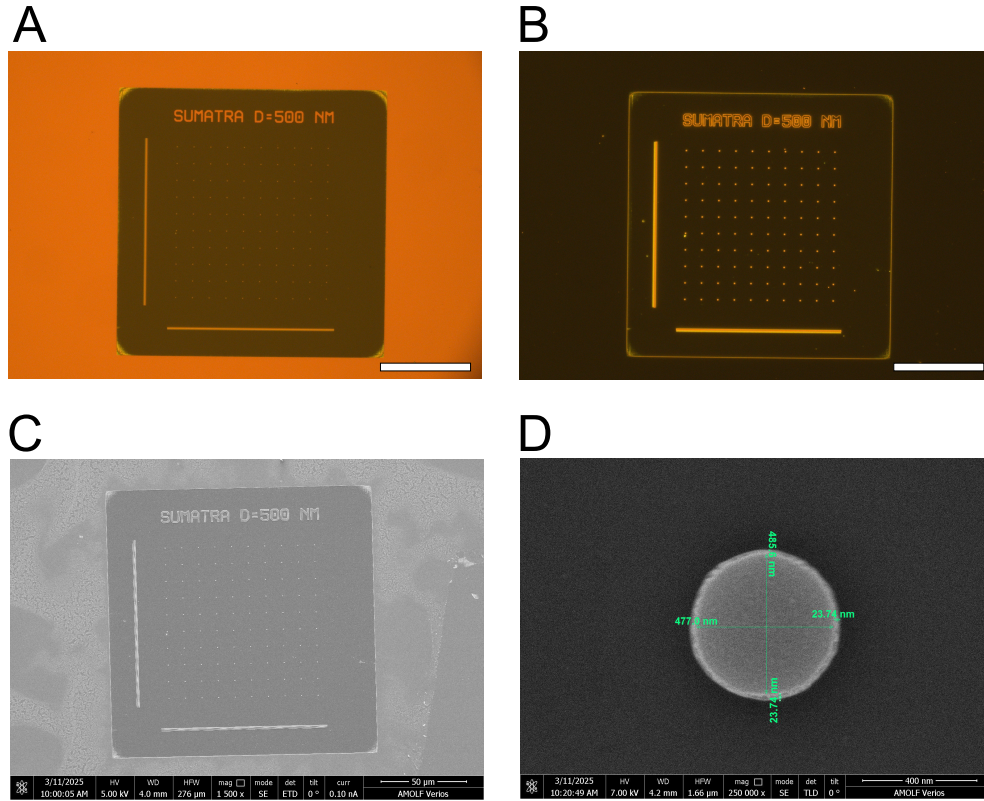


Fig. S2. Characterization of the silicon nanopillar sample (after etching and washing). (A) Bright-field optical microscopy image of an array of 500 nm diameter pillars. The scale bar is 50 μm. (B) Dark-field optical microscopy image of the same sample area. (C) Scanning electron microscopy image of the same sample area (acquired with standard Everhart-Thornley Detector). (D) Electron microscopy image of a single pillar (acquired with Through-Lens Detector). Annotations show that the pillar closely matches the targeted 500 nm diameter.

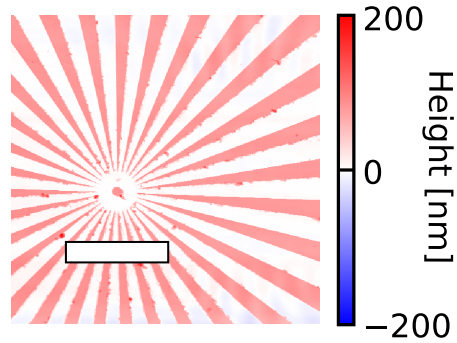


Fig. S3. AFM image covering the central 30 x 30 μm² of a 31-spoke Siemens star. The scale bar is 10 μm. From the AFM image, we determined that the etched structures are 80 nm deep.

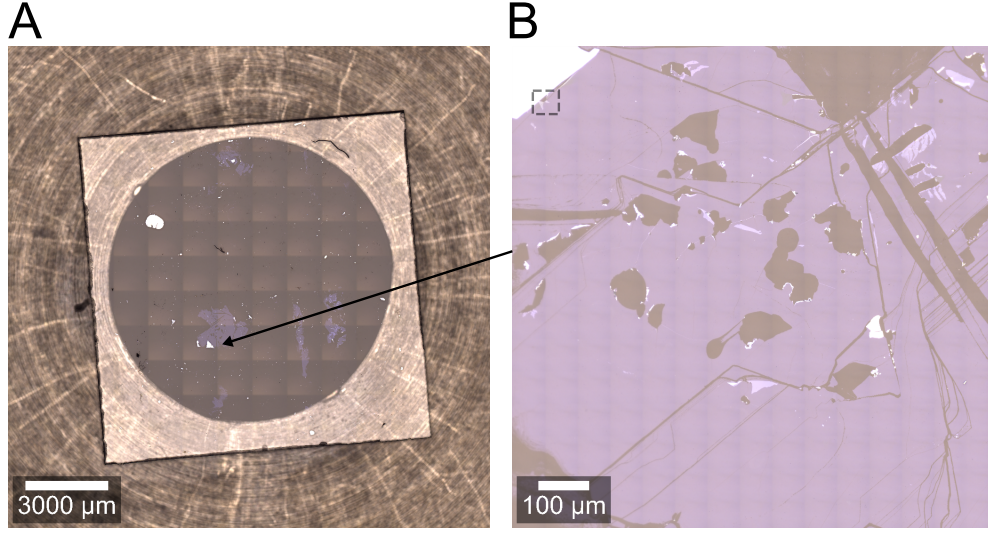


Fig. S4. Bright-field optical microscopy inspection of the MoS₂ sample. (A) The full sample, which includes several monolayer flakes (purple) and gold residues (white) on the quartz substrate. The arrow indicates the area shown in panel B. (B) Zoom in on a big monolayer flake. We can identify some bilayer patches, which appear as lighter purple. The dashed box indicates the area that we inspect with HHG microscopy.

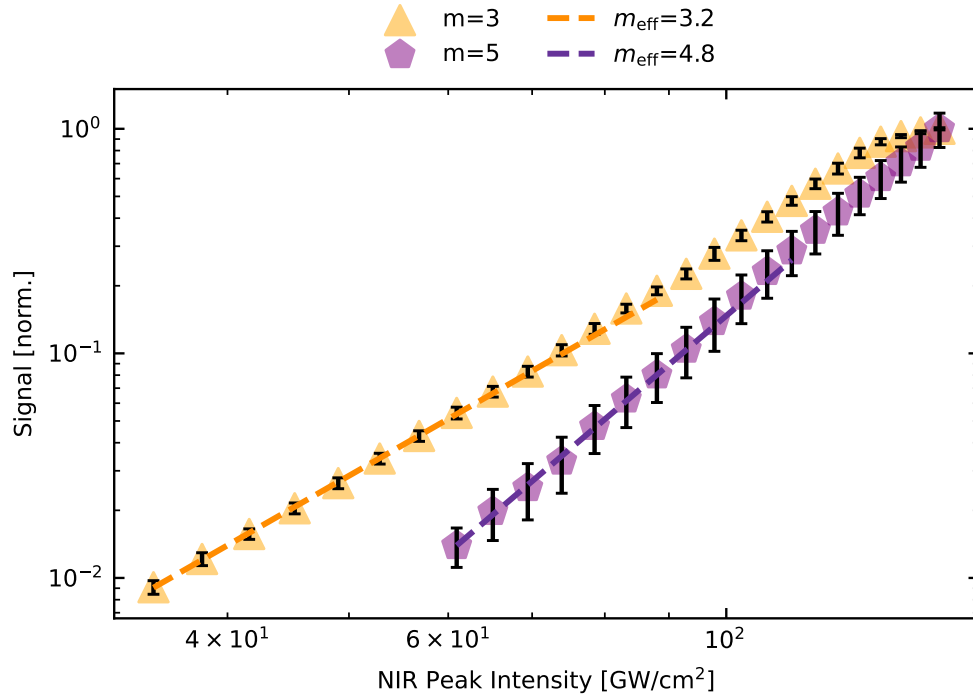


Fig. S5. Perturbative power-law scaling measured in a pristine silicon area of the nanopillar sample. The signal reflects the mean lock-in amplifier output signal over a 3×3 pixel image (FOV $1 \times 1 \mu\text{m}^2$). The data points are normalized to the signal at the highest NIR peak intensity. The error bars indicate the σ signal variation across the 9 pixels in the image. A least-squares fit determines power-law coefficients of 3.2 and 4.8 for the third and fifth harmonics, respectively.