

Electronic Supplementary Information (ESI)

Surface plasmon enhanced photochemical etching of p-type GaP: a direct demonstration of wavelength selectivity

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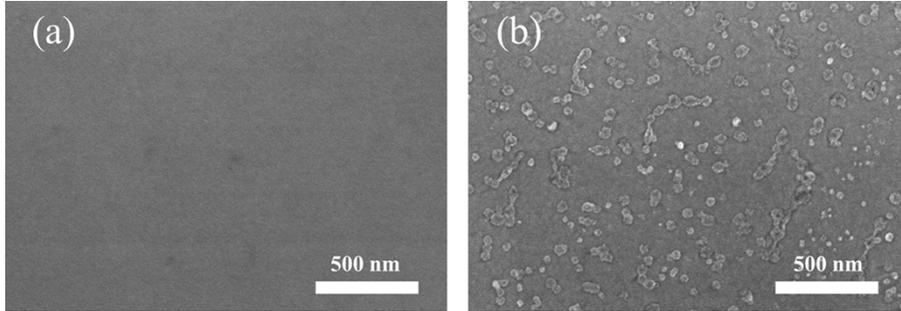
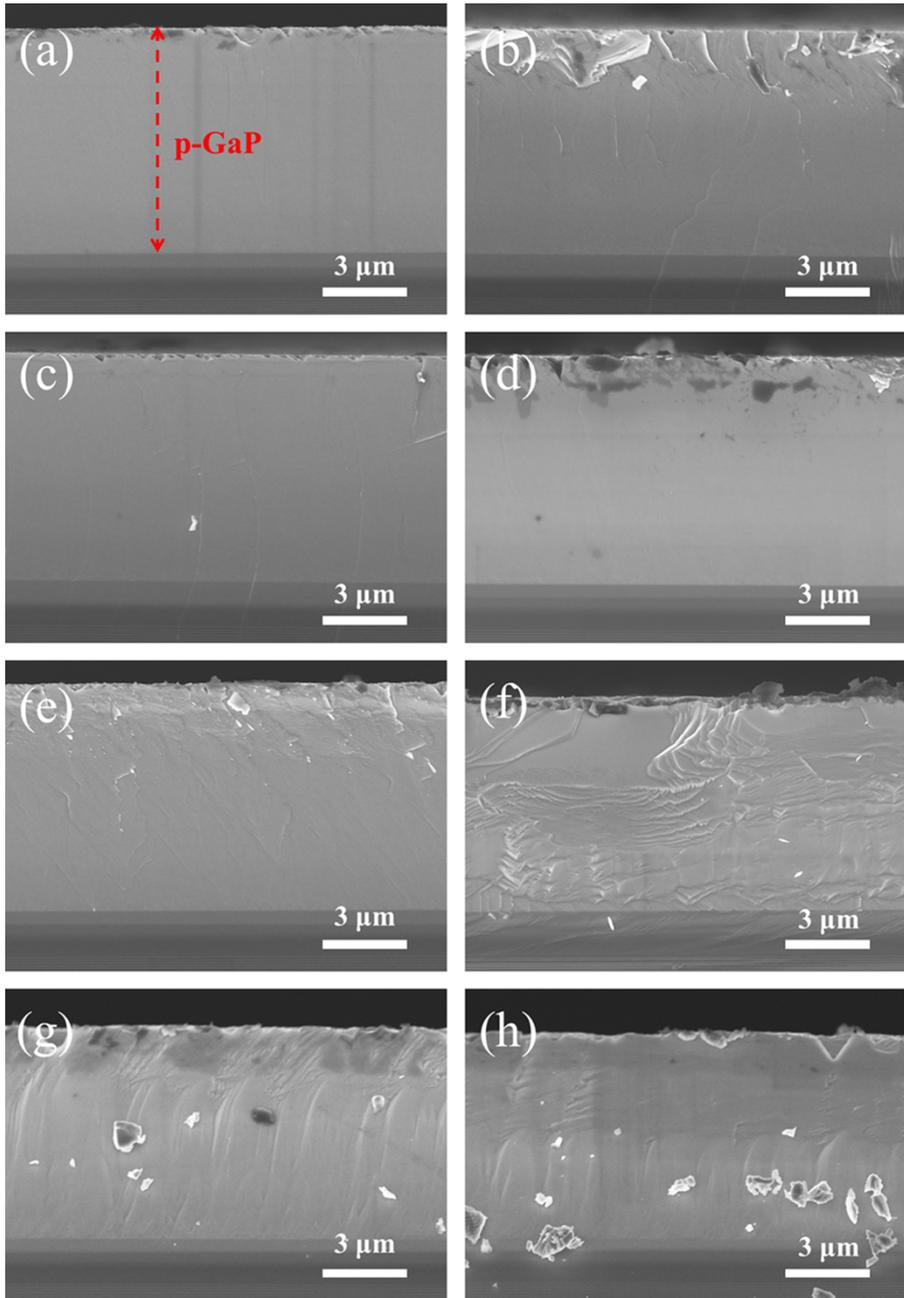
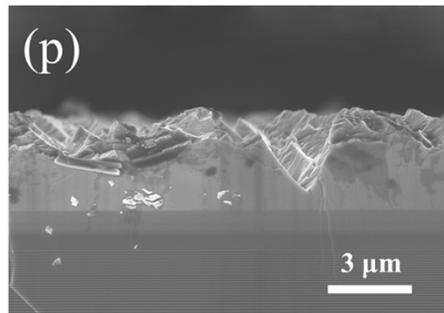
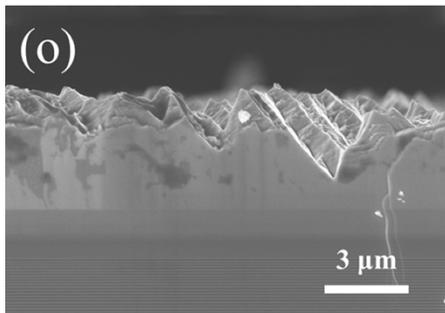
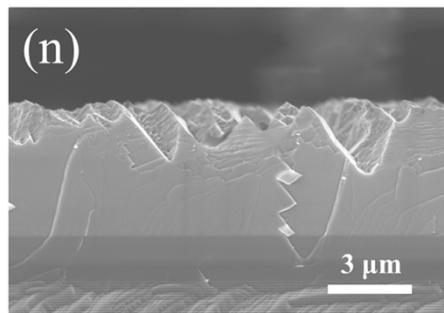
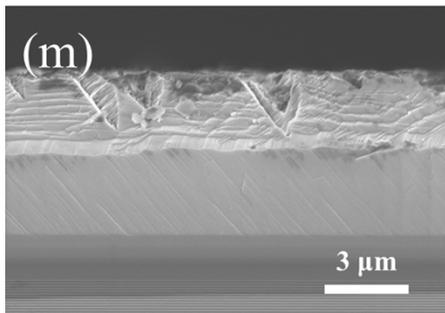
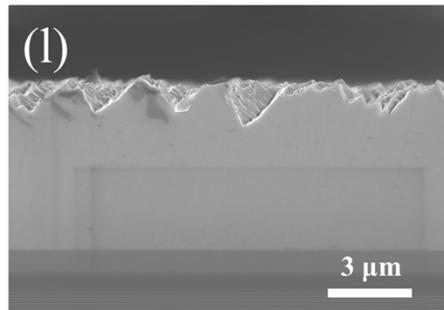
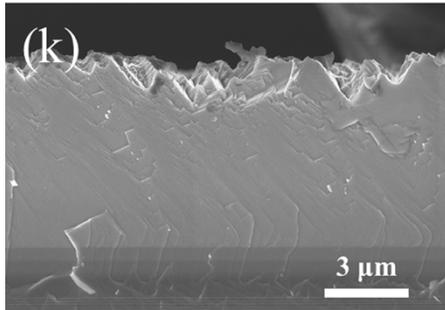
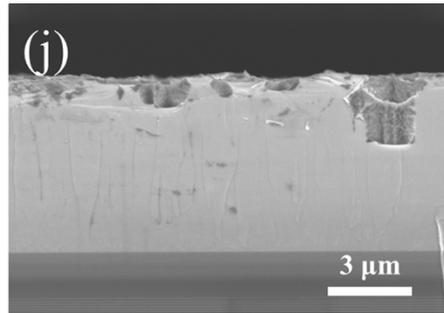
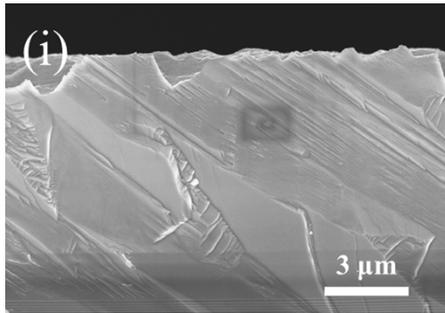


Figure S1. SEM images of p-GaP samples after photochemical etching in dark for 6 hour. (a) blank sample and (b) Au-coated sample. The SEM images revealed that both samples remained flat and featureless without significant etching structures.





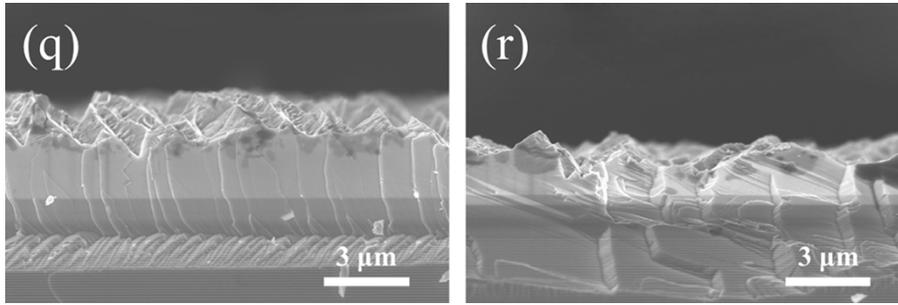


Figure S2. Cross section SEM images of p-GaP samples after photochemical etching under 532 nm laser irradiations. (a, c, e, g, i, k, m, o, q) are blank p-GaP samples etched for 0 s, 50 s, 200 s, 300 s, 400 s, 500 s, 600 s, 700 s, and 800 s, respectively. (b, d, f, h, j, l, n, p, r) are Au- coated p-GaP samples etched for 0 s, 50 s, 200 s, 300 s, 400 s, 500 s, 600 s, 700 s, and 800 s, respectively.

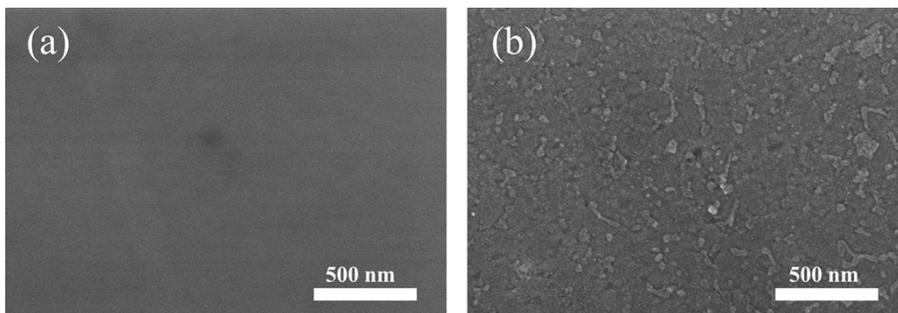


Figure S3. SEM images of p-GaP samples after photochemical etching under 650 nm laser irradiations. (a) blank sample and (b) Au-coated sample. It reveals that, after etching for 900 s, there is no observable etching features on both the blank and the Au-coated samples.

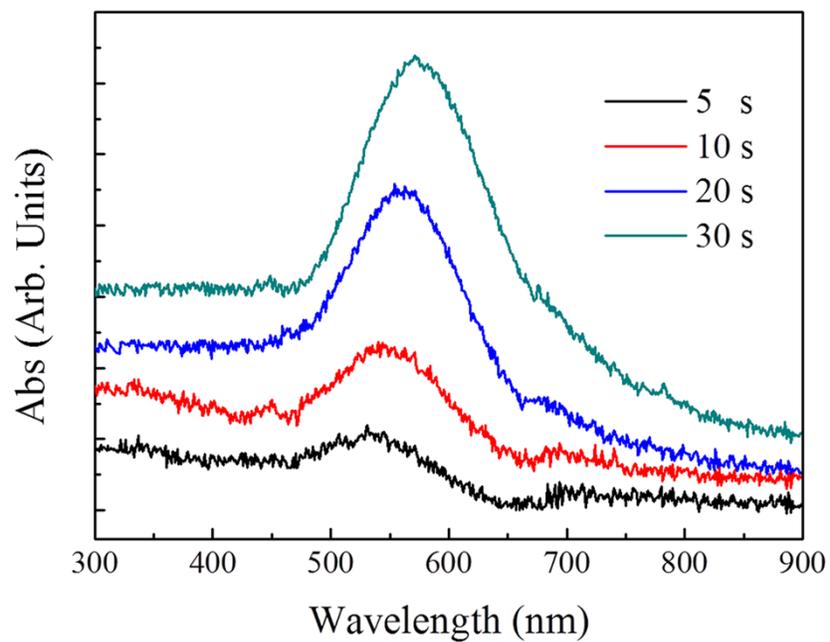


Figure S4. Ultraviolet-visible (UV) absorption spectra for different sputtered time of Au nanostructures on glass substrates. The absorption spectra suggested that the absorption peak of Au nanostructures is around 532 nm.