Electronic Supplementary Material (ESI) for Nanoscale.

Impact of Metal Crystallinity-related Morphologies on the Sensing Performance of Plasmonic Nanohole Arrays

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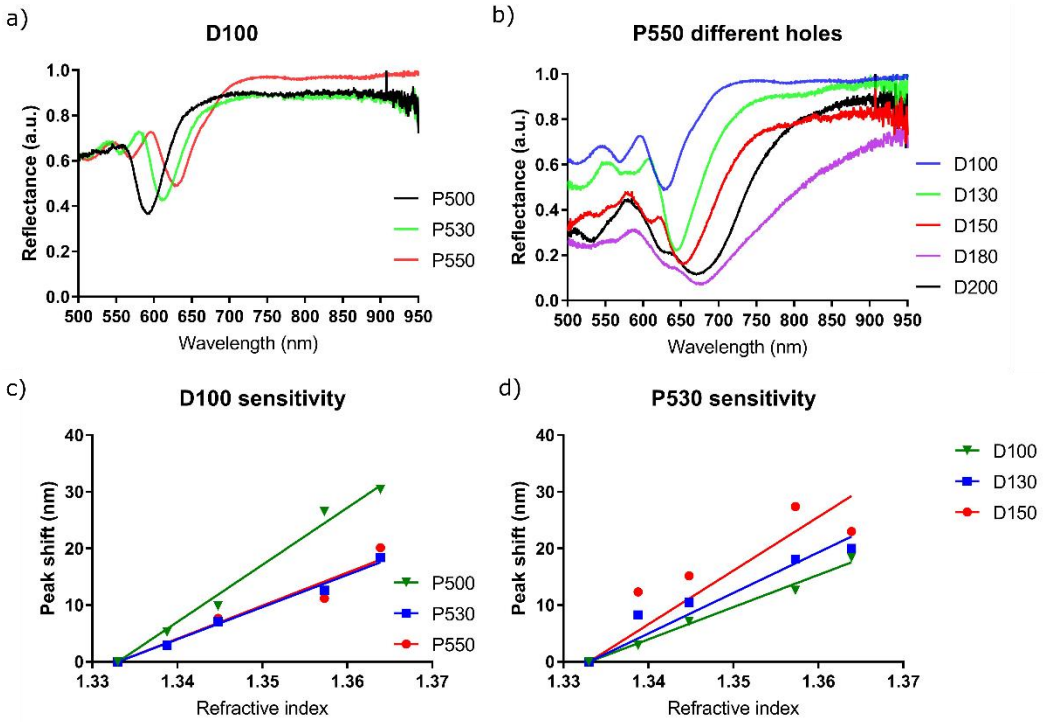

Fig. S1 The influence of hole size and periodicity to the optical reflectance spectrum and sensitivity. a, c) The influence of periodicity to the spectrum and sensitivity with a certain hole size; b, d) The influence of hole size to the spectrum and sensitivity with a certain periodicity. (Dxxx: diameter xxx nm in EBL design; Pxxx: hole centre-to-centre distance xxx nm).

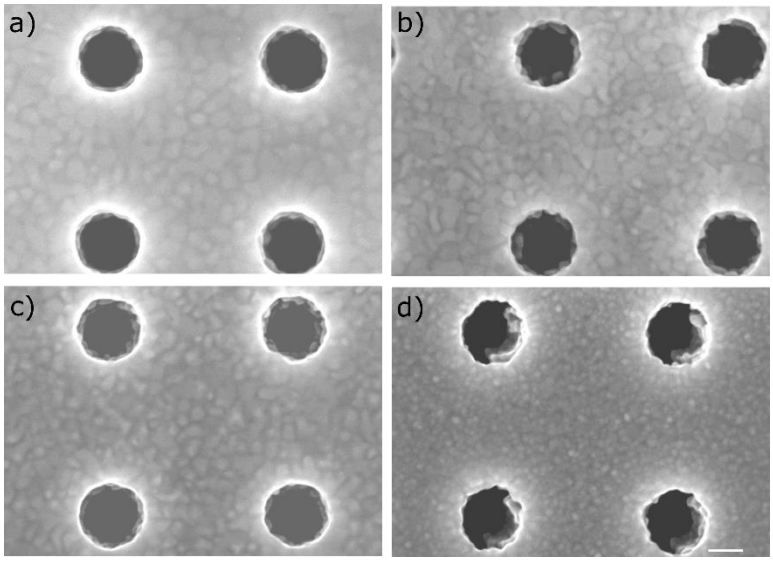

Fig. S2 SEM images of nanohole arrays showing side depositions on the inside walls of the nanoholes from all deposition methods. a) E-beam 0.5 Å/sec, b) E-beam 4 Å/sec, c) Lesker thermal 4Å/sec, d) Edward thermal 4 Å/sec. Scale bar for all figures is shown in d): 100 nm. The brightness of the images was enhanced to show the inside walls clearly.

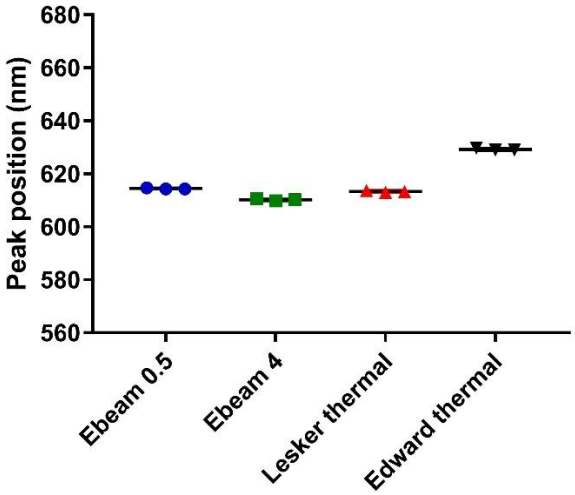

Fig. S3 Peak positions from each sample with three replicates. Edward thermal provided a larger peak position 629.2 nm in average, while the other three methods provided similar peak position (614.5 nm, 610.2 nm and 613.4 nm in average for Ebeam 0.5, Ebeam 4, and Lesker thermal respectively).

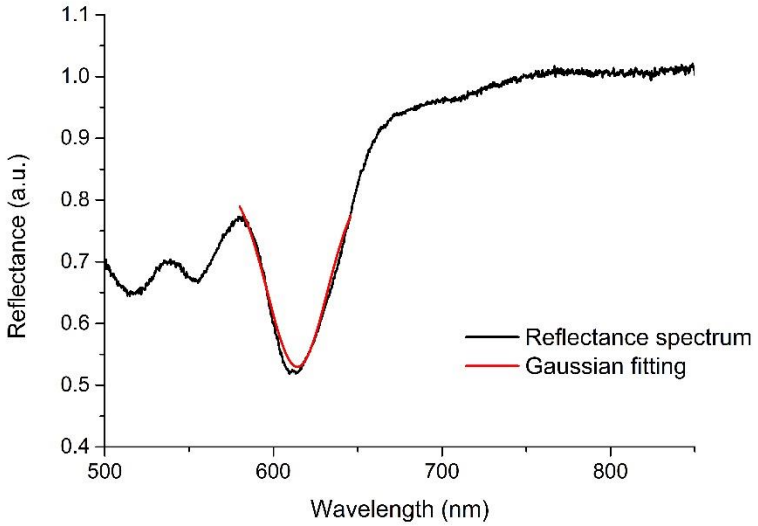

Fig. S4 The calculation of the full width at half maximum (FWHM) of the resonance peak in reflectance spectra. The (-1, 0) mode was fitted by Gaussian function using OriginPro 9, and the FWHM was provided by the software.

Table S1. Experimental parameters for all the metal deposition techniques

Method name	**Equipment**	**Ti deposition rate (Å/sec)**	**Au deposition rate (Å/sec)**	**Base Pressure (Torr)**
Ebeam 0.5	PVD-Ebeam	2	0.5	8.70×10^{-7}
Ebeam 4	PVD-Ebeam	2	4	$2\text{-}3 \times 10^{-6}$
Lesker Thermal	Lesker Thermal	1.5 to 2	3.8-4.2	$2\text{-}5 \times 10^{-6}$
Edward Thermal	Edwards Auto500 Thermal	1-2	3.8-4.4	6.5×10^{-6} to 1.5×10^{-5}