

Supplementary Information: Adaptable electro-optic detection of THz radiation using a laser written bull's-eye antenna

Hesam Heydarian¹, Xitong Xie², Aswin Vishnuradhan¹, Wei Cui¹, Arnaud Weck^{1,2},
Angela Gamouras^{1,3}, Jean-Michel Ménard^{1,3}

¹Department of Physics, University of Ottawa, Ottawa, K1N 6N5, ON, Canada.

²Department of Mechanical Engineering, University of Ottawa, Ottawa, K1N 6N5, ON, Canada.

³National Research Council Canada, Ottawa, K1A 0R6, ON, Canada.

The effects of the geometrical parameters on performance of device B are explored with numerical simulations in Fig. S1. A careful selection of the grating height and duty-cycle is crucial to optimize the mode volume enhancement. The grating period is the main parameter determining the resonance frequency. Hence, by changing the geometrical parameters we can optimize the device performance for enhanced detection sensitivity over a large range of frequencies.

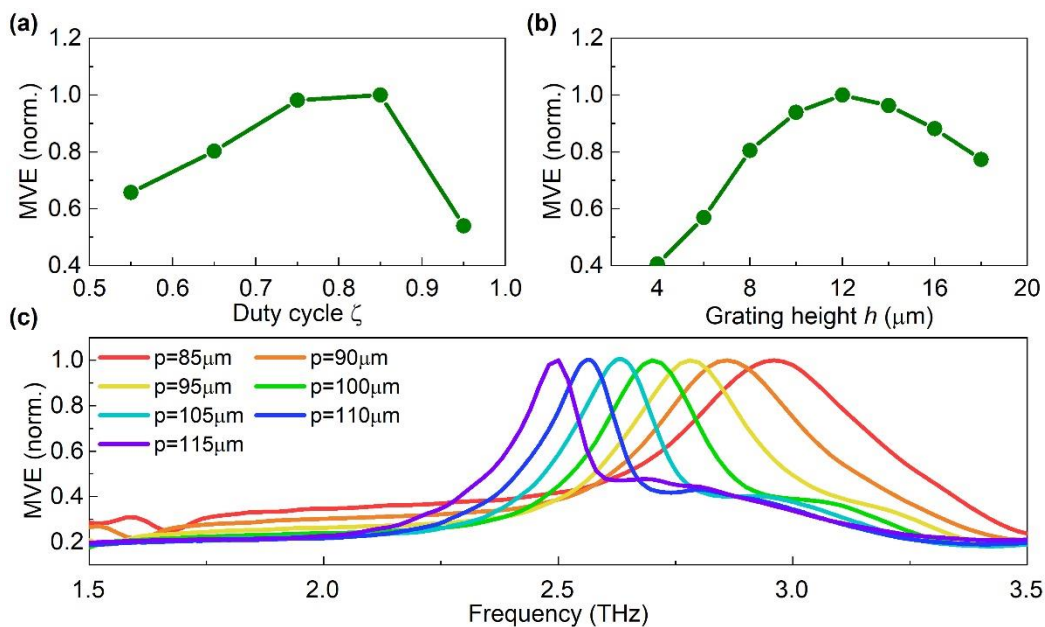


Fig. S1. Effect of the geometrical parameters (a) grating duty cycle ζ , (b) grating height h , and (c) grating period p on the plasmonic detection device performance. These parameters are described in Fig. 1 in the main text.

Fig. S2 shows the EOS trace collected with device A and B with a $340\ \mu\text{m}$ FWHM THz spot size, and corresponding power spectrum in logscale.

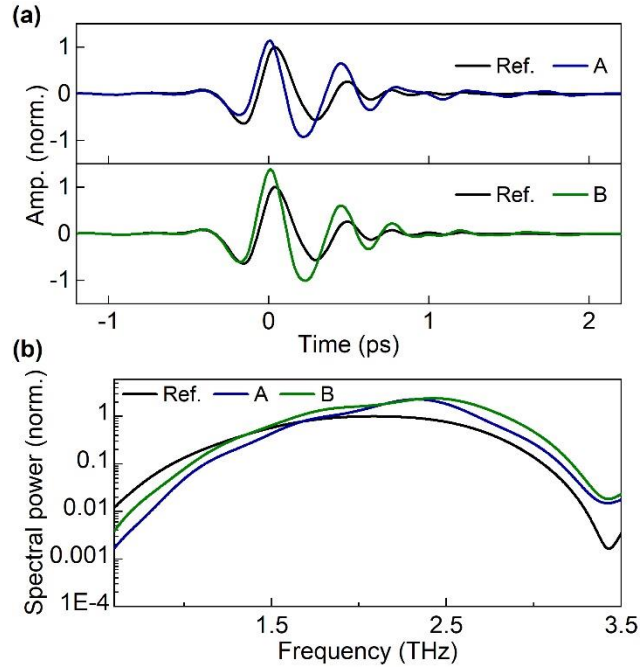


Fig. S2. THz measurement results. (a) THz transients measured by EOS with plasmonic structures A (blue line) and B (green line) or with the reference crystal (black line). (b) Corresponding spectral power in log scale obtained by Fourier transformation of the time-domain data.