

## **Supporting information**

# Refractive index sensing with Fano resonant plasmonic nanostructures: A symmetry based nonlinear approach

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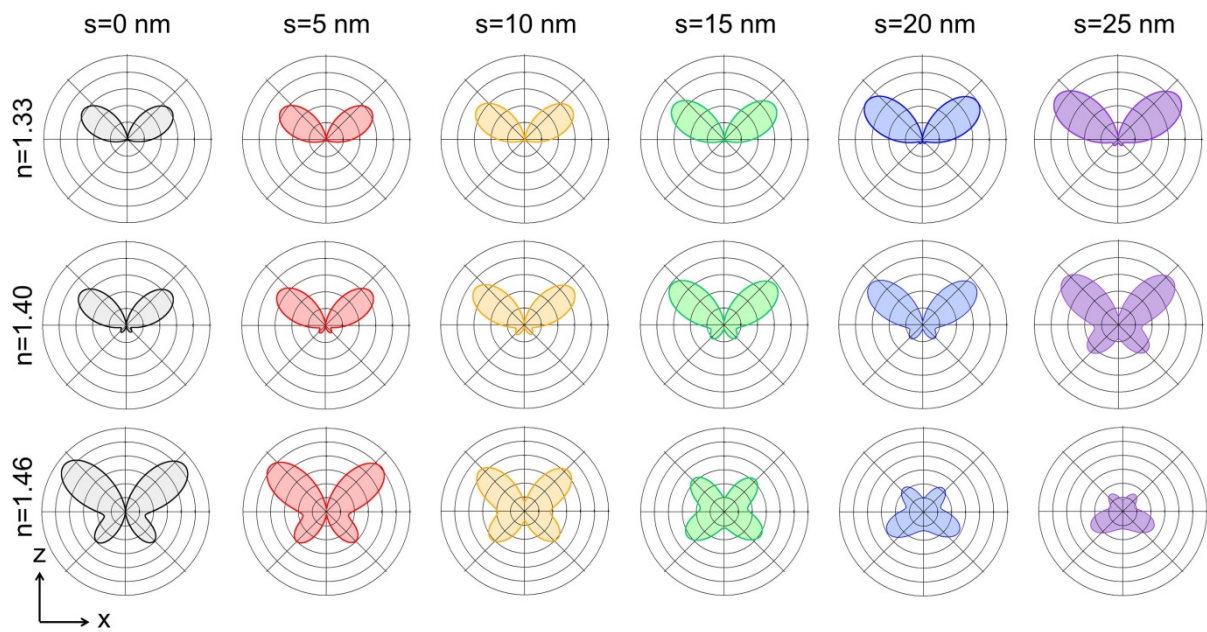


Figure S1: Normalized SH intensity scattered in the  $(O, x, z)$  plane as a function of the scattering angle. The incident wavelength is 860 nm. The refractive index of the surrounding medium  $n = 1.33$  (first row), and  $n = 1.40$  (second row), and  $n = 1.46$  (third row).

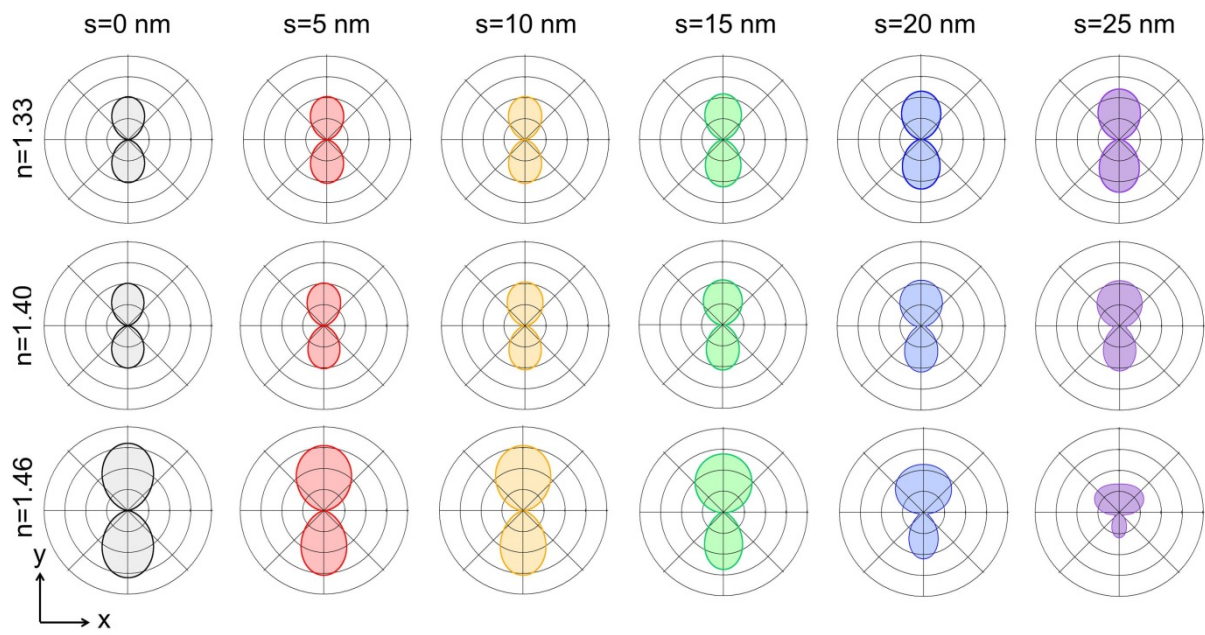


Figure S2: Normalized scattered intensity in the  $(O, x, y)$  plane as a function of the scattering angle. The incident wavelength is 860 nm. The refractive index of the surrounding medium  $n = 1.33$  (first row), and  $n = 1.40$  (second row), and  $n = 1.46$  (third row).

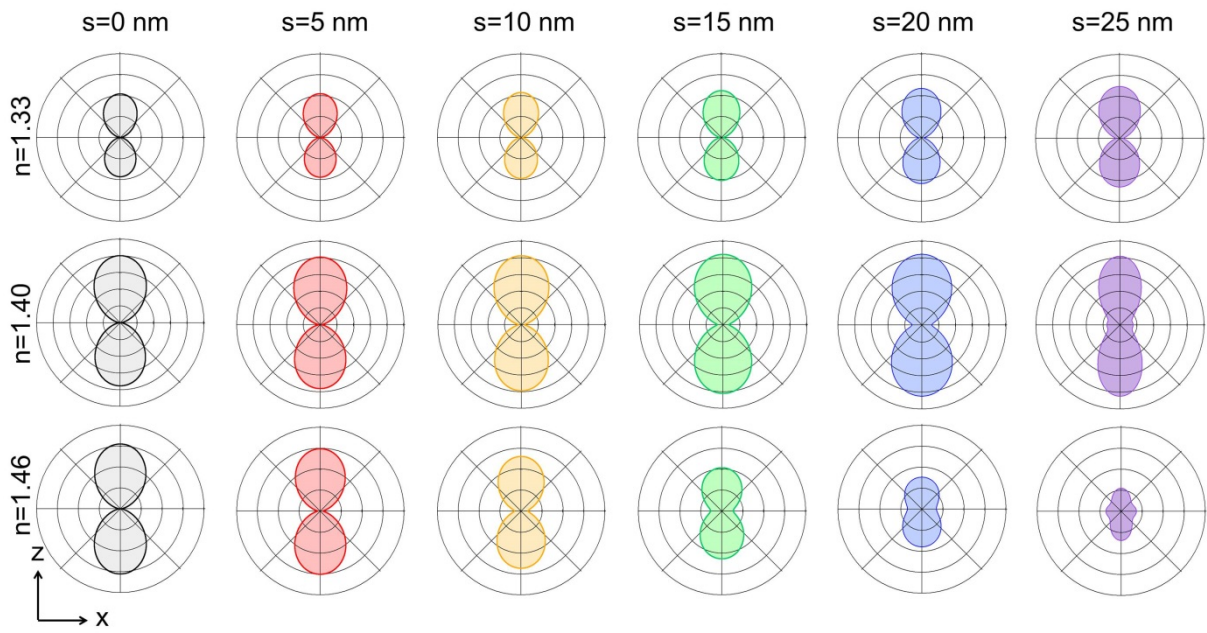


Figure S3: Normalized scattered intensity in the  $(O, x, z)$  plane as a function of the scattering angle. The incident wavelength is 860 nm. The refractive index of the surrounding medium  $n = 1.33$  (first row), and  $n = 1.40$  (second row), and  $n = 1.46$  (third row).

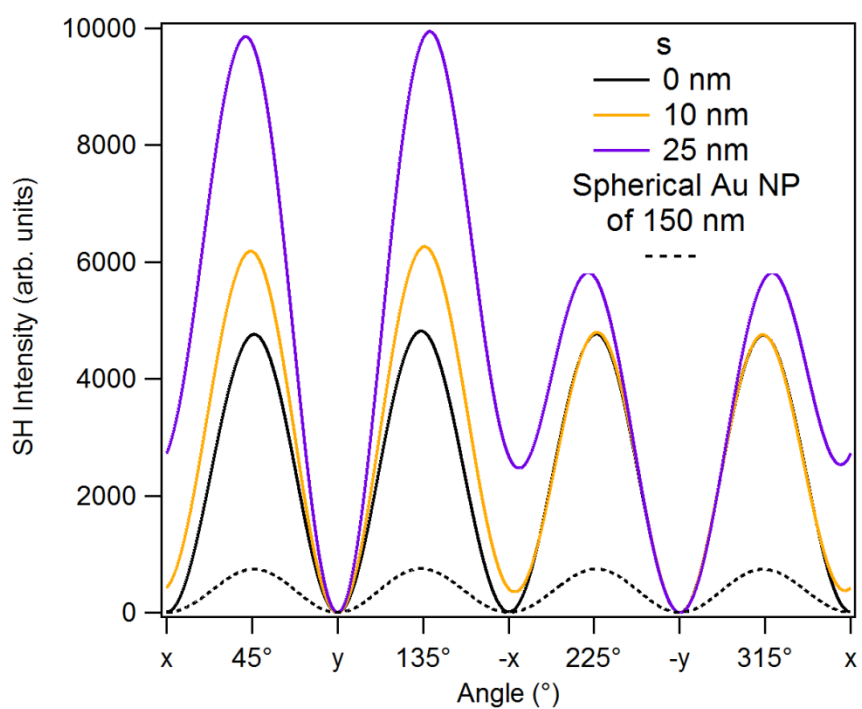


Figure S4: Normalized SH intensity scattered in the  $(O, x, y)$  plane as a function of the scattering angle. The incident wavelength is 860 nm for the gold nanodolmen and 780 nm for Au nanosphere. The refractive index of the surrounding medium  $n = 1.40$  for the gold nanodolmens and  $n = 1.33$  for the Au nanosphere.