

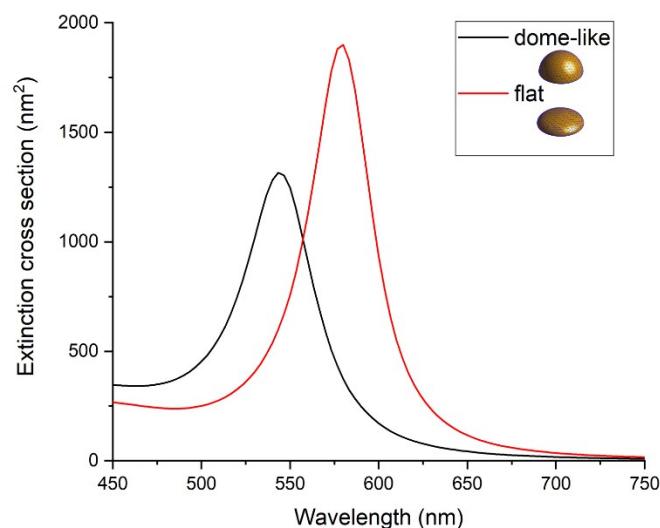
Electronic Supplementary Information

## Vapour sensing properties of graphene-covered gold nanoparticles

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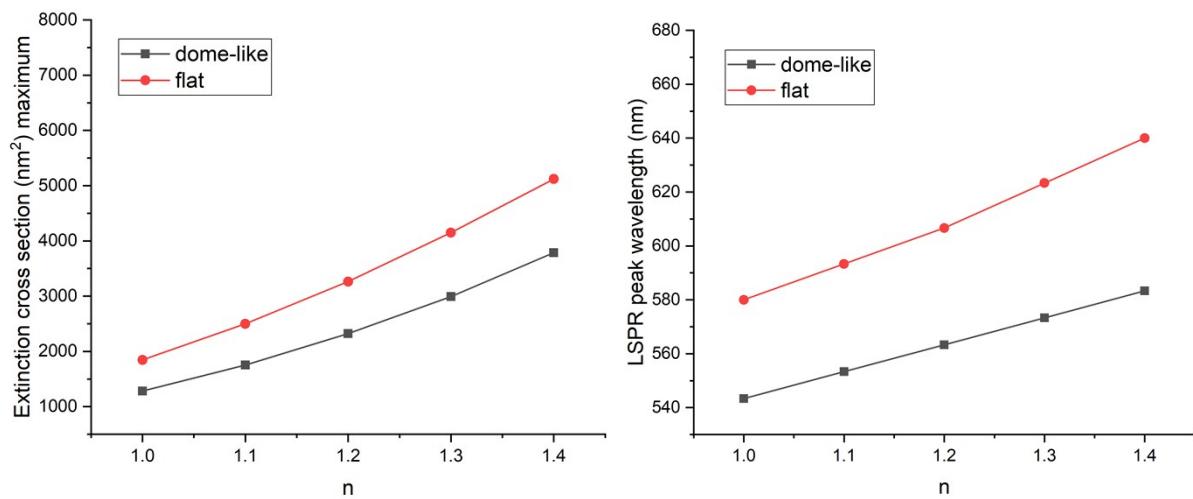
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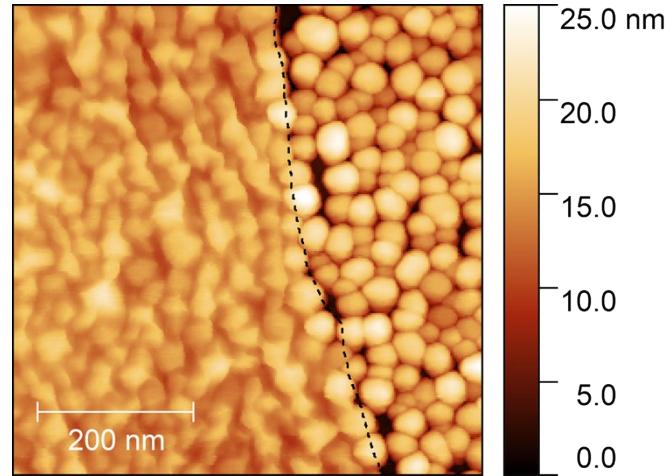


**Figure S1.** Localized surface plasmon resonance (LSPR) calculated for dome-like (black) and flat (red) gold nanoparticles with diameter of 17 nm on a substrate. Dome-like particle height=17 nm, diameter=34 nm; flat particle: height=9 nm; diameter=34 nm. Substrate refractive index: 1.54; retardation effects neglected; angle of incidence: 0°. Simulation was carried out using the MNPBEM Toolbox (Waxenegger, J.; Trügler, A.; Hohenester, U. *Plasmonics Simulations with the MNPBEM Toolbox: Consideration of Substrates and Layer Structures*. *Computer Physics Communications* **2015**, *193*, 138–150.).

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**Figure S2.** Refractive index dependence of the extinction cross section maximum (left) and LSPR wavelength (right) for dome-like (black) and flat (red) gold nanoparticles with dimensions like in Fig. S1.



**Figure S3.** AFM topography image of partially covered gold nanoparticles measured in PeakForce mode with a repulsive force of 1 nN. The boundary between graphene-covered (left part of the image) and bare nanoparticles (right part of the image) is marked by dashed line. Observe that since we measure with a repulsive force, the graphene is pressed against the nanoparticles. Thus, in this image the shape of the underlying nanoparticles is better perceived, compared to the tapping mode AFM image shown in the main text (Fig. 1c). The surface coverage of bare and graphene-covered nanoparticles is similar.