Supporting Information

Adaptive Multispectral Infrared Camouflage

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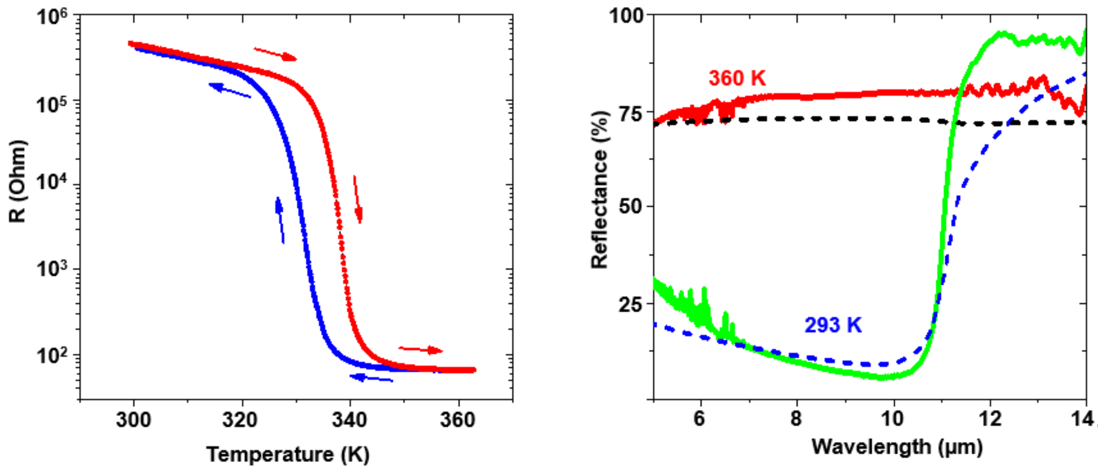

Figure S1 | Characterization of VO_2 film. (a) Temperature dependence of resistance for 150 nm VO_2 film while heating (red) and cooling (blue). (b) FDTD simulated (dashed) and FTIR measured (solid) reflectance of VO_2 film in semiconducting and metallic states.

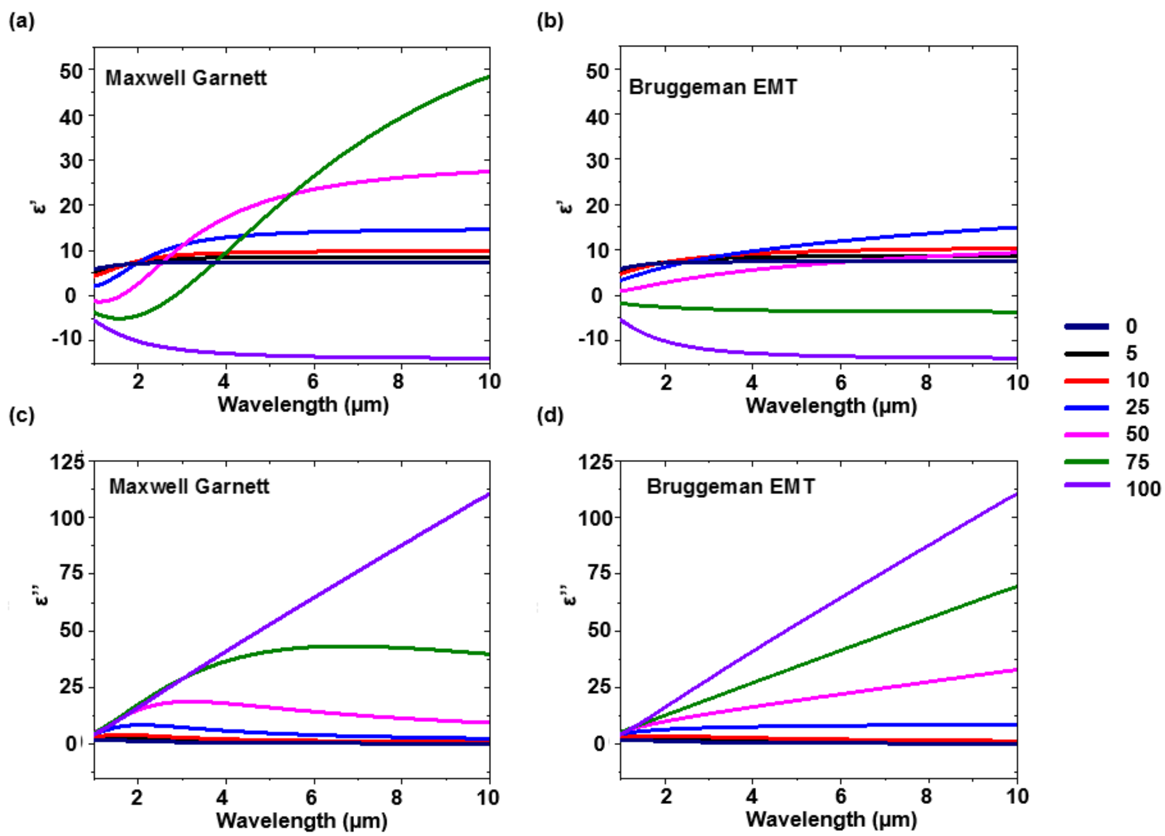

Figure S2 | Permittivity calculations of VO_2. Real and imaginary components of VO_2 permittivity calculated using the (a),(c) Maxwell Garnett and (b),(d) Bruggeman effective medium models for different metallic volume percentages as indicated in the legend.

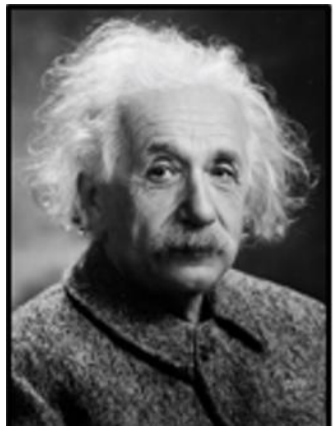

Figure S3 | Original image of Albert Einstein that is encoded on the plasmonic surface

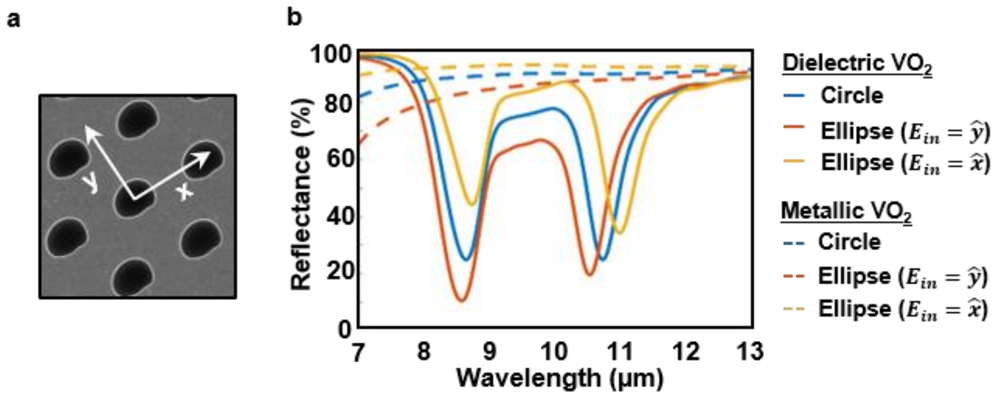

Figure **S4 |** (a) Scanning electron micrograph of the surface written by DLW with hole diameter 2180 nm and period of 4000 nm, (b) FDTD simulations of the absorber with hexagonal array of holes that perfect circle and ellipse.

The patterns are elliptical due to an unintended effect during the direct laser writing. In order to expose such a large hole the laser trajectory is that of a helix. At high enough speeds, the ability of the piezo-electric stage to reproduce perfect circles deteriorates, leading to an elliptical path and subsequent elliptical holes. The features could be optimized to be made more circular, but at great costs in speed/write times. To estimate the effect this ellipticity has on the spectra and polarization sensitivity, we perform FDTD simulations with perfectly circular holes and that of elliptical ones. Here the diameter of the perfect holes is 2180 nm. In case of the ellipse, the difference between the semi-major and semi-major axes is taken to be 300 nm as measured directly from the SEM image Figure S4 (a). The introduction of ellipticity induces a polarization dependence in the surface's resonances, that when probed with unpolarized light would result in broadening of the spectral features (Figure S4 (b)). In the metallic phase, the device exhibits ~ 80% reflection between 8 – 12 µm band. This is observed experimentally in the spectral features of Figure 3(d).