

“A general method for the incorporation of nanoparticles into superhydrophobic films by Aerosol Assisted Chemical Vapour Deposition (AACVD)”

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Supporting Information

1. Magnetic moment calculations from SQUID data:

Saturation magnetisation of Fe₃O₄ + film (0.7 mg) = 0.00137 emu

Saturation magnetisation of Fe₃O₄ powder (1.6 mg) = 0.06749 emu (42.2 emu/g)

Mass of Fe₃O₄ in polymer film = 0.06749 emu / 42.2 emu = 0.0325 mg

% concentration by mass = 0.0325 mg / 0.7mg = 4.6%

A saturation magnetisation of 42.2 emu/g was determined for the Fe₃O₄ powder giving an estimated mass concentration of 4.6 % in the polymer film.

2. TEM,EDX and HRTEM analysis for various nanoparticle/nanoparticle-Sylgard films:

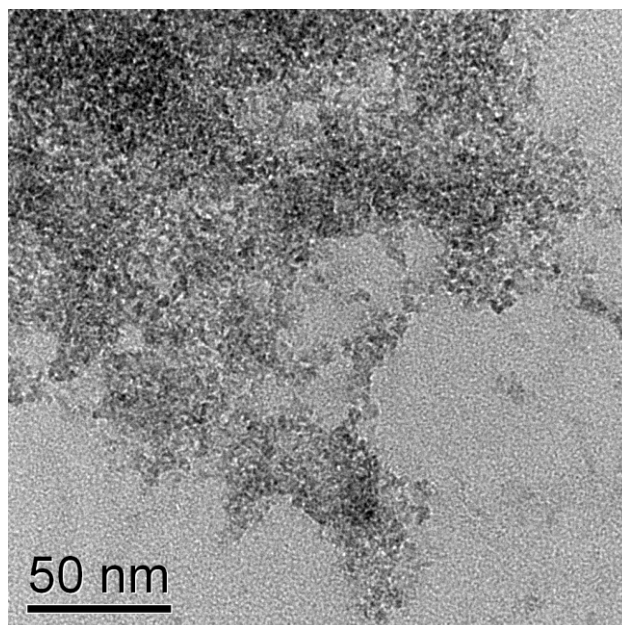


Figure S1. Transmission electron microscope (TEM) image of chemically synthesised oleic acid functionalised anatase nanoparticles

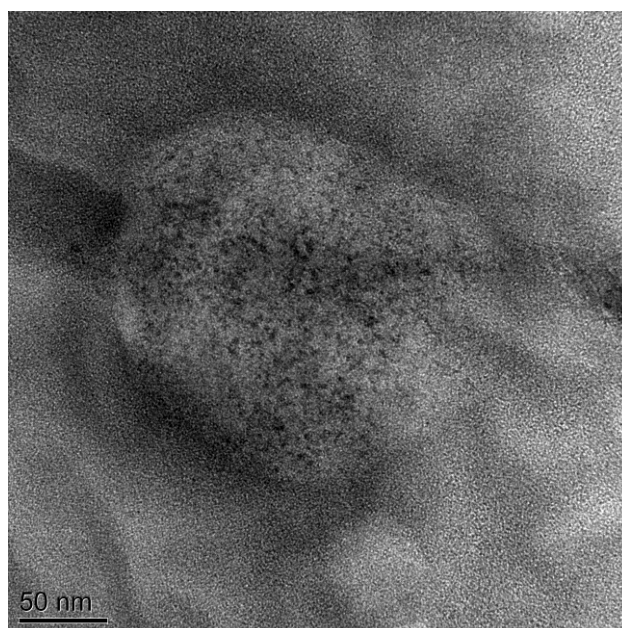


Figure S2. Transmission electron microscope (TEM) image of the titania nanoparticles incorporated into the Sylgard film. The dark areas represent the TiO_2 NPs.

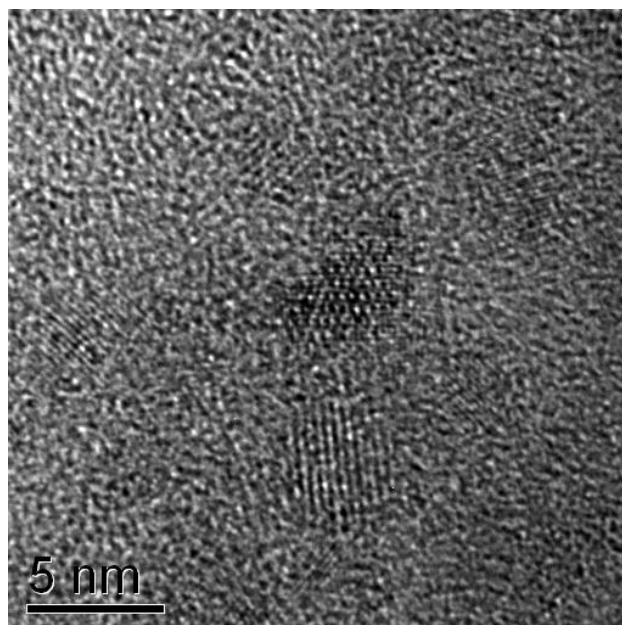


Figure S3. HRTEM image of chemically synthesised TiO₂ nanoparticles

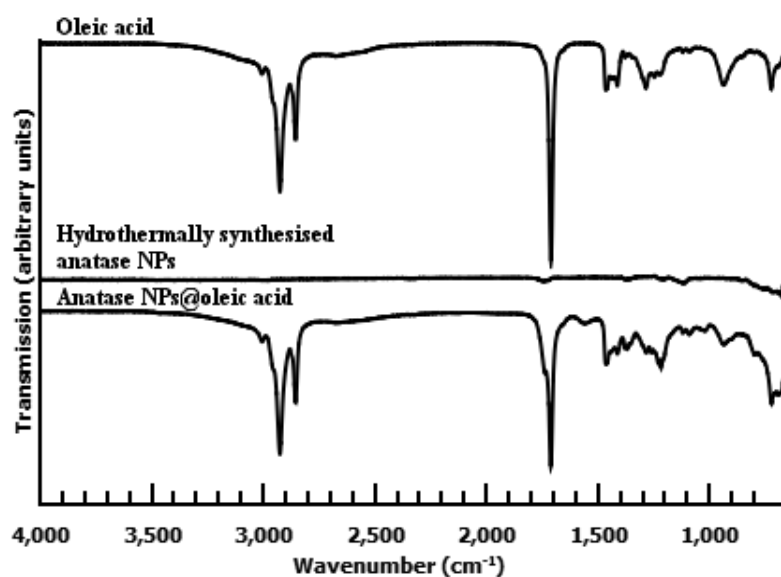
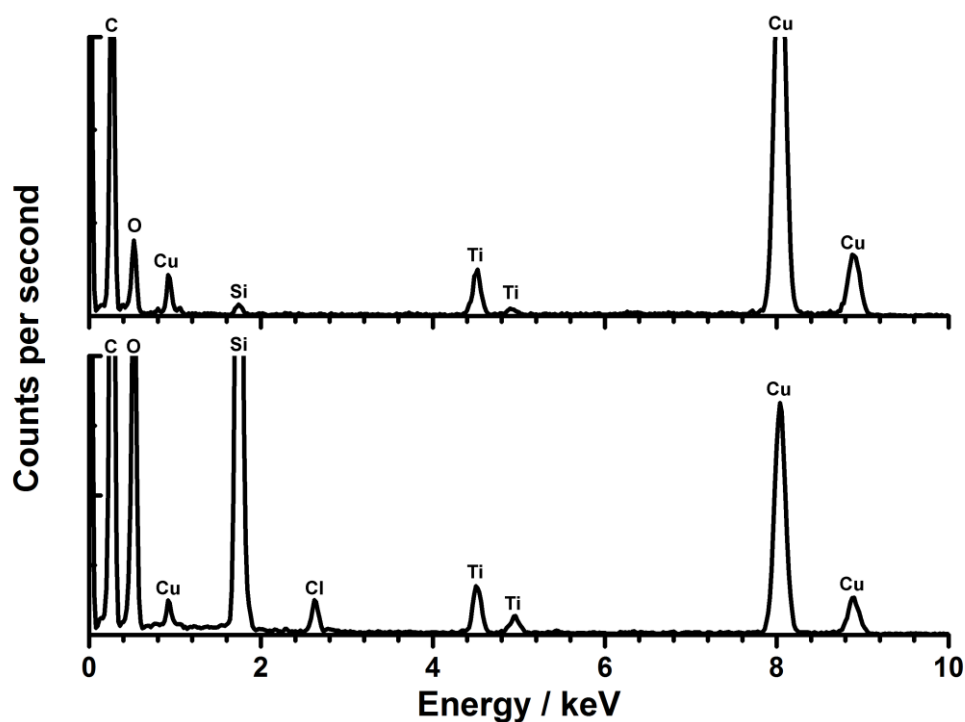


Figure S4. Infrared (IR) spectra of hydrothermally synthesised TiO₂ nanoparticles, showing oleic acid functionalisation

Figure S5. EDX spectra of chemically synthesised TiO₂ nanoparticles (top) and in the Sylgard film (bottom)



ard film (bottom)

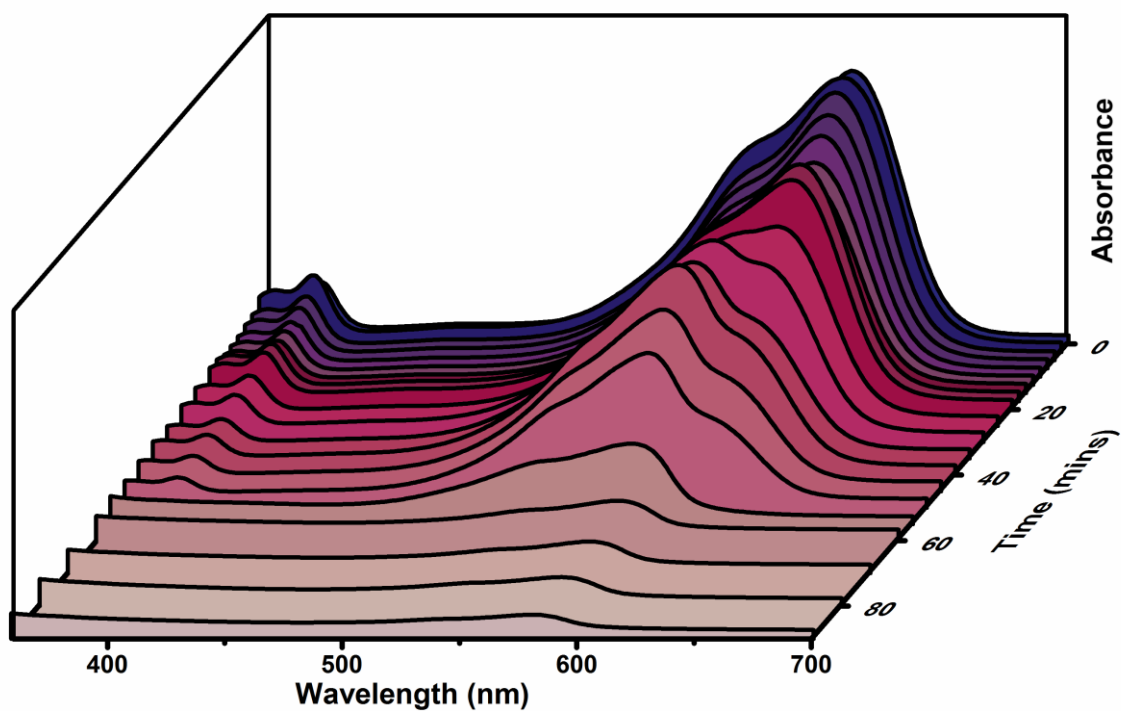


Figure S6. UV/vis composite mapping the degradation of Resazurin sodium salt (Aldrich, BioReagent) dye over time when placed on a TiO₂ nanoparticle siloxane film when exposed to 254nm radiation.

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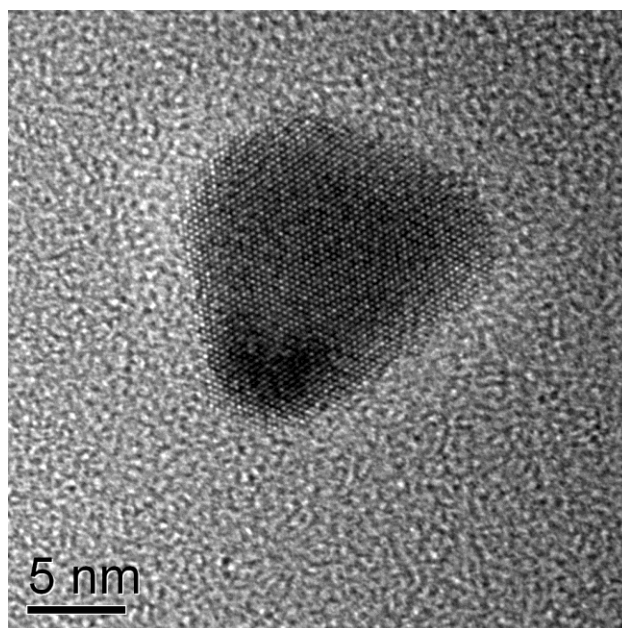


Figure S7. HRTEM image of a single CoO nanocrystal

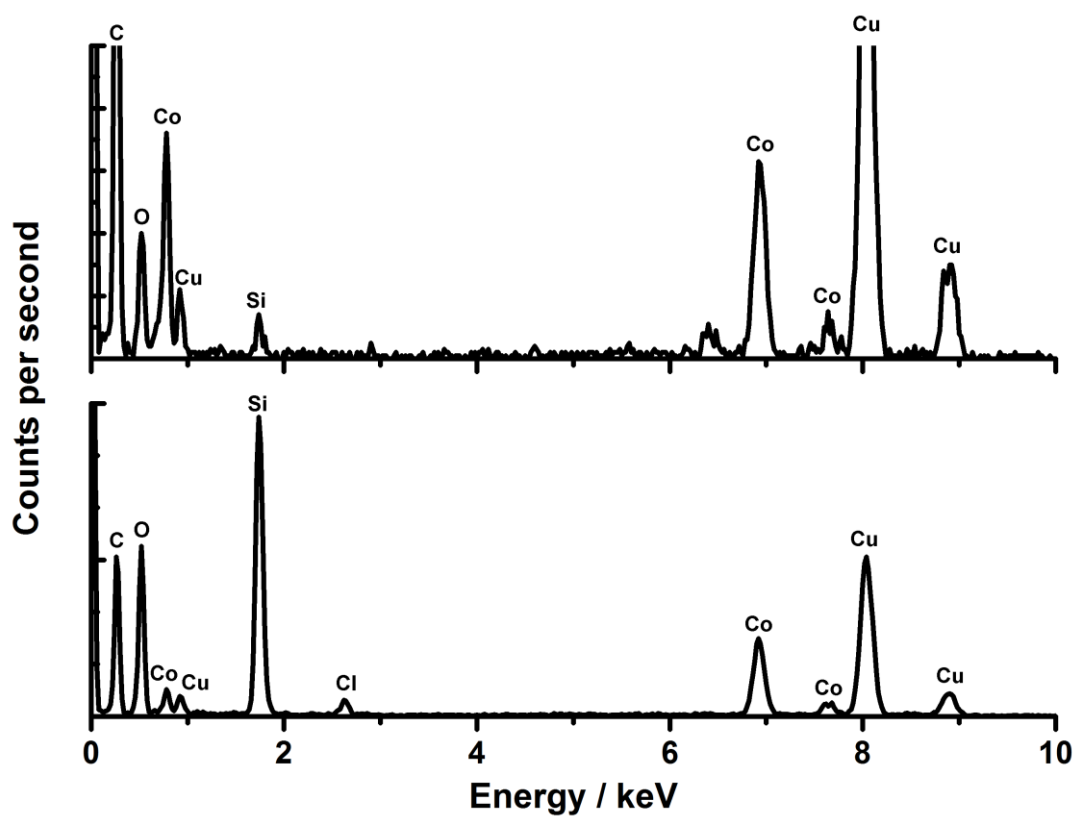


Figure S8. EDX spectra of CoO nanoparticles (top) and in the Sylgard film (bottom)

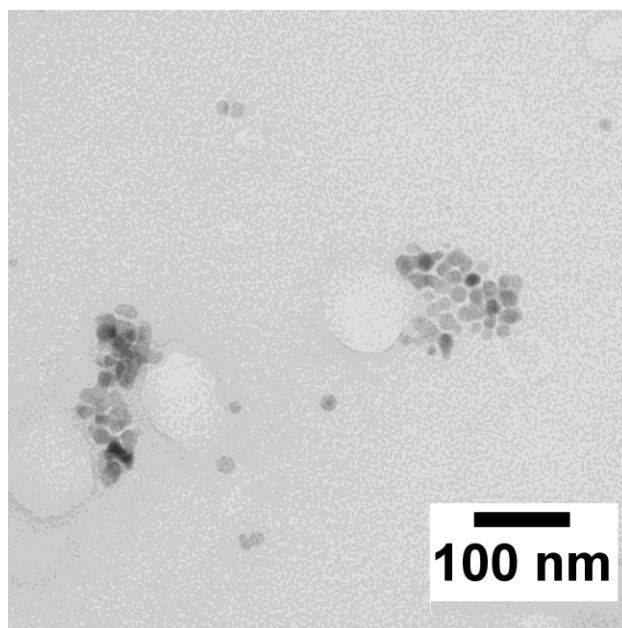


Figure S9. TEM image of Au nanoparticles synthesised using the Brüst method

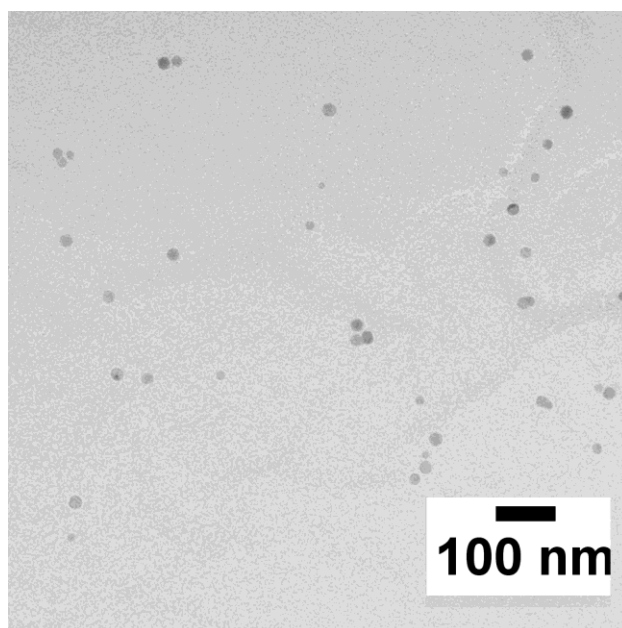


Figure S10. TEM image of hydrophobised silica coated Au nanoparticles after hydrophobation with trimethoxy(octadecyl) silane

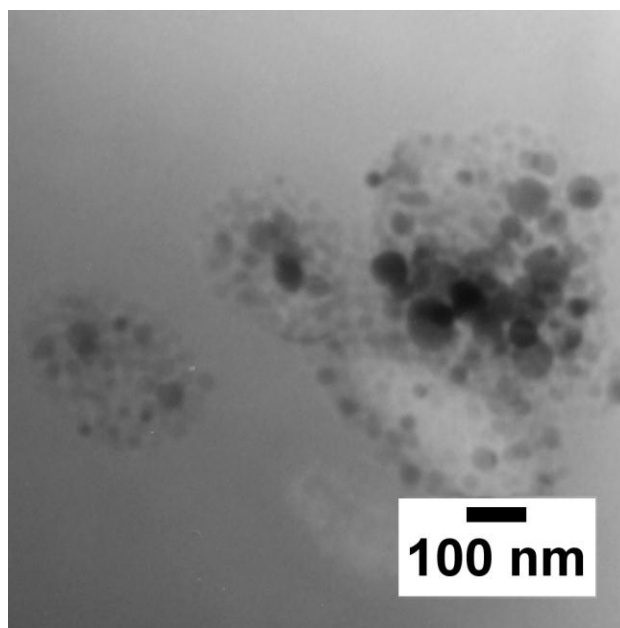


Figure S11. TEM image of silica coated Au nanoparticles in the Sylgard film

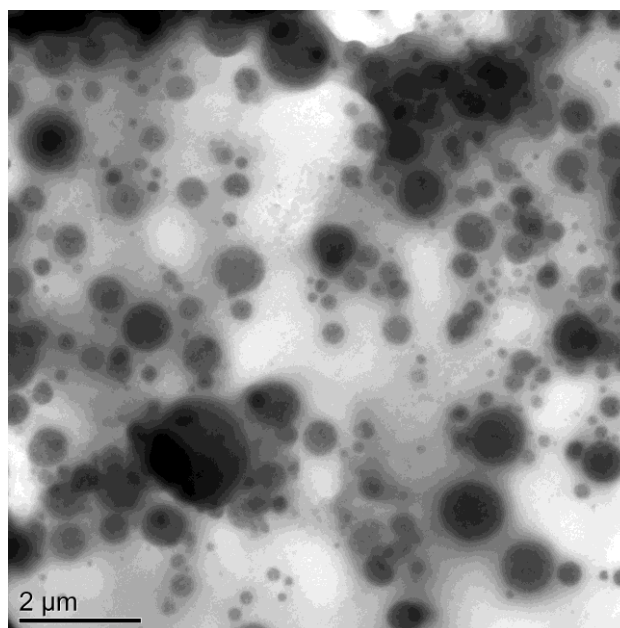


Figure S12. TEM image of clusters of Fe_3O_4 nanoparticles in the Sylgard film showing their distribution throughout the surface

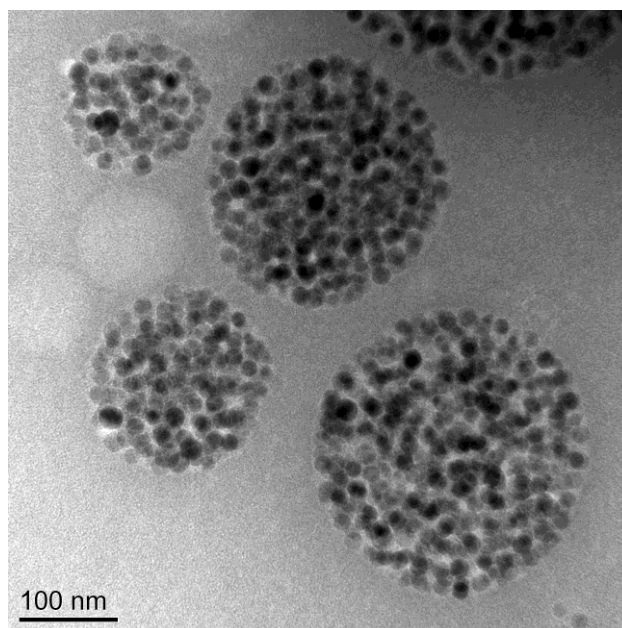


Figure S13. TEM image of Fe₃O₄ nanoparticles in the Sylgard film, showing particle agglomeration upon polymer curing. The spherical shape of the clusters suggests solvent evaporation from the carrier aerosol droplet

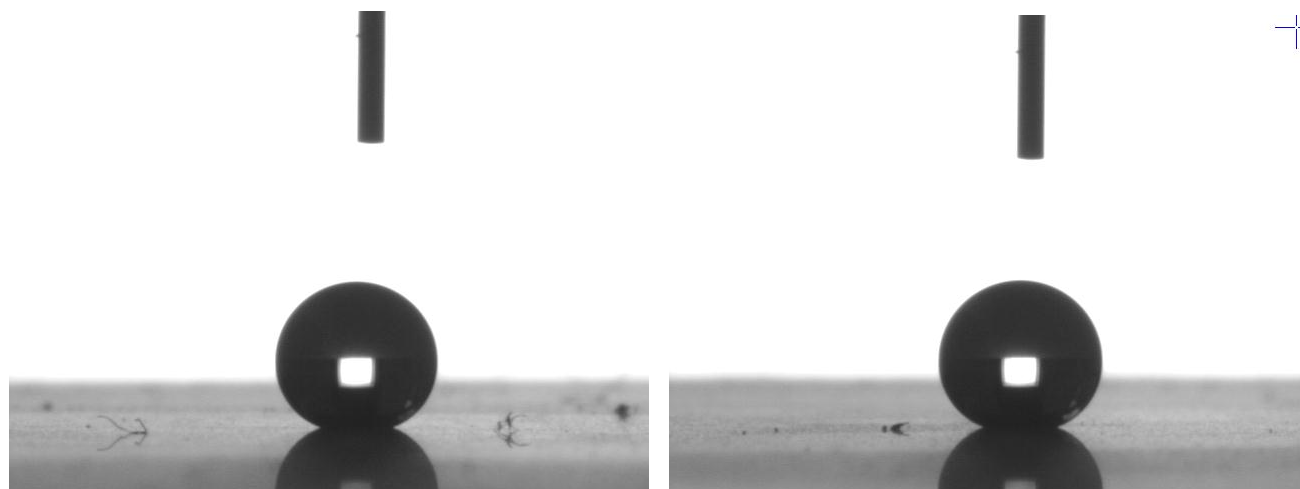


Figure S14. Example of a water contact angle measurement of a plain Sylgard-184 film (left) and the CoO/Sylgard film (right)