

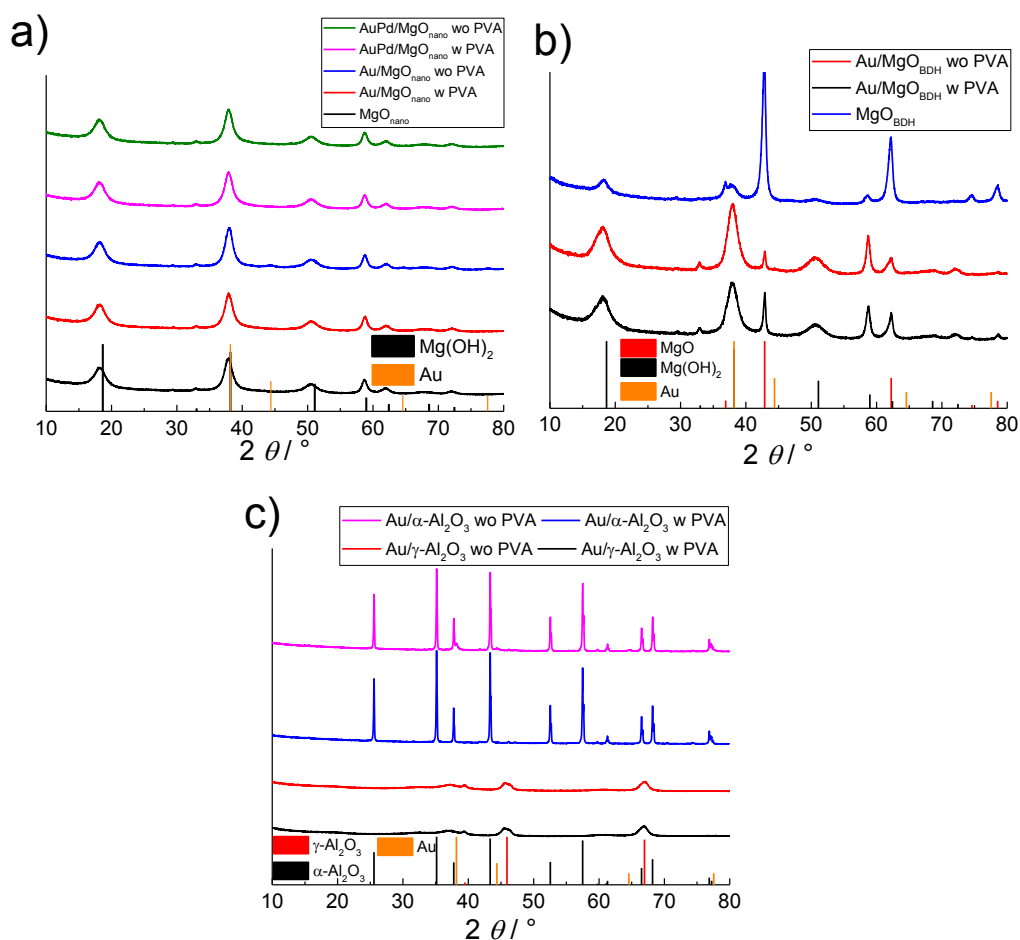
## Supporting Information

### **Glycerol Oxidation using MgO and Al<sub>2</sub>O<sub>3</sub> supported gold and gold-palladium nanoparticles prepared in the absence of polymer stabilisers.**

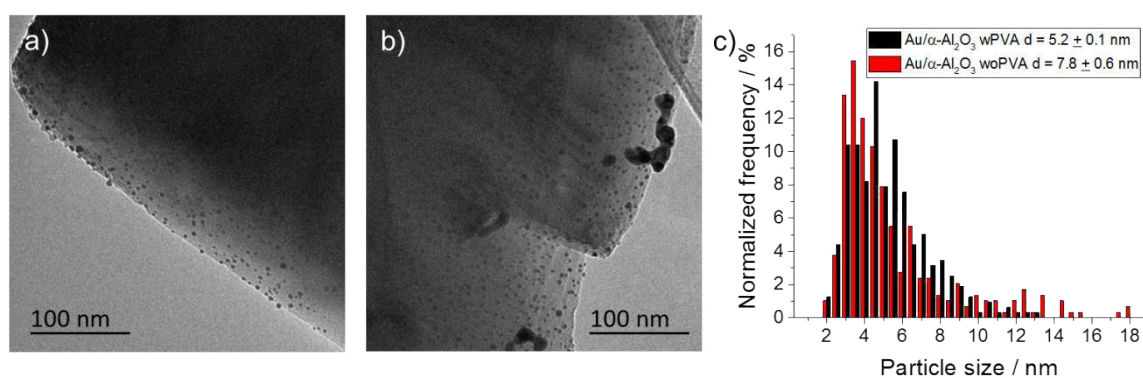
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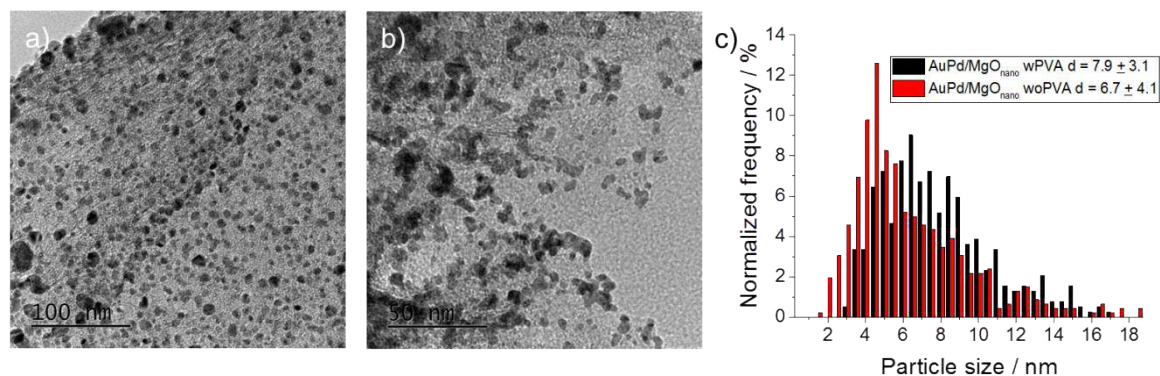
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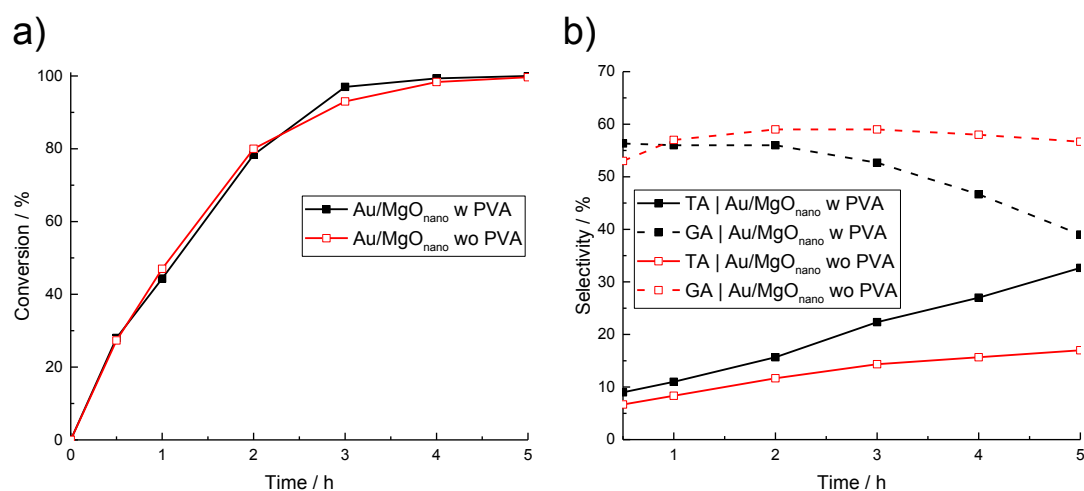
**Figure S1.** XRD patterns of a) Au/MgO<sub>nano</sub> and AuPd/MgO<sub>nano</sub> materials and of pristine MgO<sub>nano</sub> as reference, b) Au/MgO<sub>BDH</sub> materials and of MgO<sub>BDH</sub> as reference, and of c) Au/α-Al<sub>2</sub>O<sub>3</sub> and Au/γ-Al<sub>2</sub>O<sub>3</sub> materials. Materials were prepared with (w) or without (wo) PVA addition during sol-immobilisation.



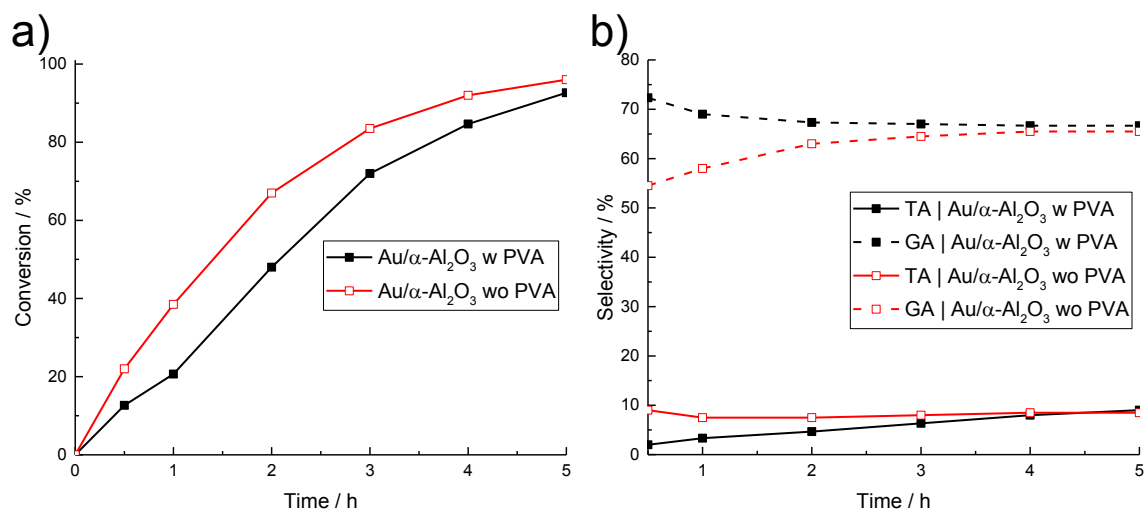
**Figure S2.** TEM micrographs of Au/α-Al<sub>2</sub>O<sub>3</sub> prepared with a) and without b) PVA by sol-immobilization. c) Histograms of particle size distributions for Au NPs (at least 300 counts for each sample).



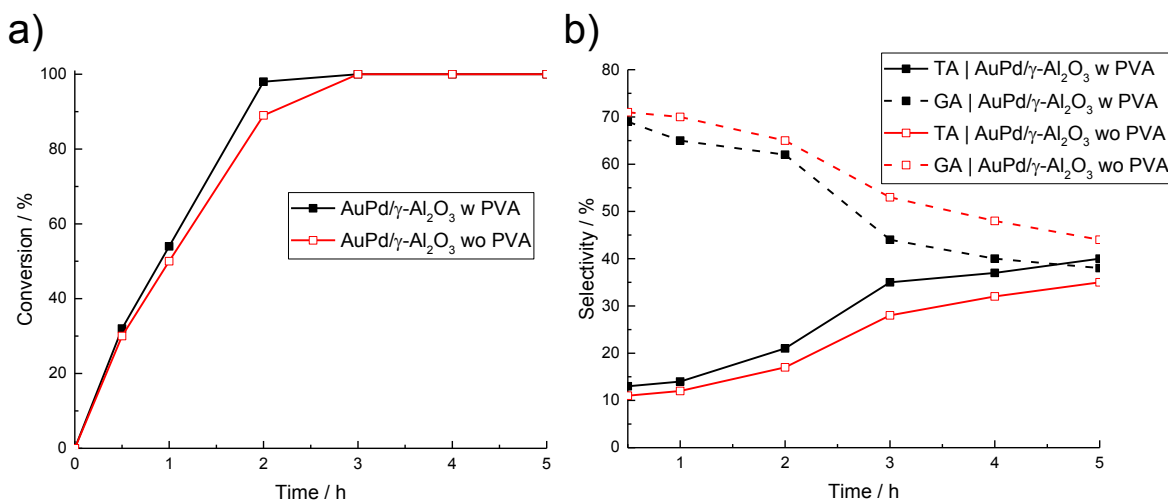
**Figure S3.** TEM micrographs of AuPd/MgO<sub>nano</sub> prepared with a) and without b) PVA by sol-immobilization. c) Histograms of particle size distributions for Au NPs (at least 400 counts for each sample).



**Figure S4.** Conversion and selectivity profiles for glycerol oxidation over 1 wt% Au/MgO<sub>nano</sub> catalysts prepared with (w) and without (wo) PVA during sol-immobilisation. Reaction conditions: 0.3 M glycerol, 2:1 NaOH/glycerol, 500:1 glycerol/metal, 10 mL, 60 °C, 3 bar O<sub>2</sub>, stirring speed 1200 rpm. TA: tartronic acid; GA: glyceric acid. Hollow forms denote PVA-free catalysts; solid lines indicate TA selectivity and dashed lines indicate GA selectivity.



**Figure S5.** Conversion and selectivity profiles for glycerol oxidation over Au/α-Al<sub>2</sub>O<sub>3</sub> catalysts prepared with (w) and without (wo) PVA during sol-immobilisation. Note that the catalyst prepared with PVA was only loaded with 0.1 wt% Au and the one without PVA was loaded with 1 wt%. Reaction conditions: 0.3 M glycerol, 2:1 NaOH/glycerol, 500:1 glycerol/metal, 10 mL, 60 °C, 3 bar O<sub>2</sub>, stirring speed 1200 rpm. TA: tartronic acid; GA: glyceric acid. Hollow forms denote PVA-free catalysts; solid lines indicate TA selectivity and dashed lines indicate GA selectivity.



**Figure S6.** Conversion and selectivity profiles for glycerol oxidation over 1 wt% AuPd/γ-Al<sub>2</sub>O<sub>3</sub> catalysts prepared with (w) and without (wo) PVA during sol-immobilisation. Reaction conditions: 0.3 M glycerol, 2:1 NaOH/glycerol, 385:1 glycerol/metal (based on Au), 10 mL, 60 °C, 3 bar O<sub>2</sub>, stirring speed 1200 rpm. TA: tartronic acid; GA: glyceric acid. Hollow forms denote PVA-free catalysts; solid lines indicate TA selectivity and dashed lines indicate GA selectivity.