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Supporting Information

Glycerol Oxidation using MgO and Al₂O₃ supported gold and gold-palladium nanoparticles prepared in the absence of polymer stabilisers.

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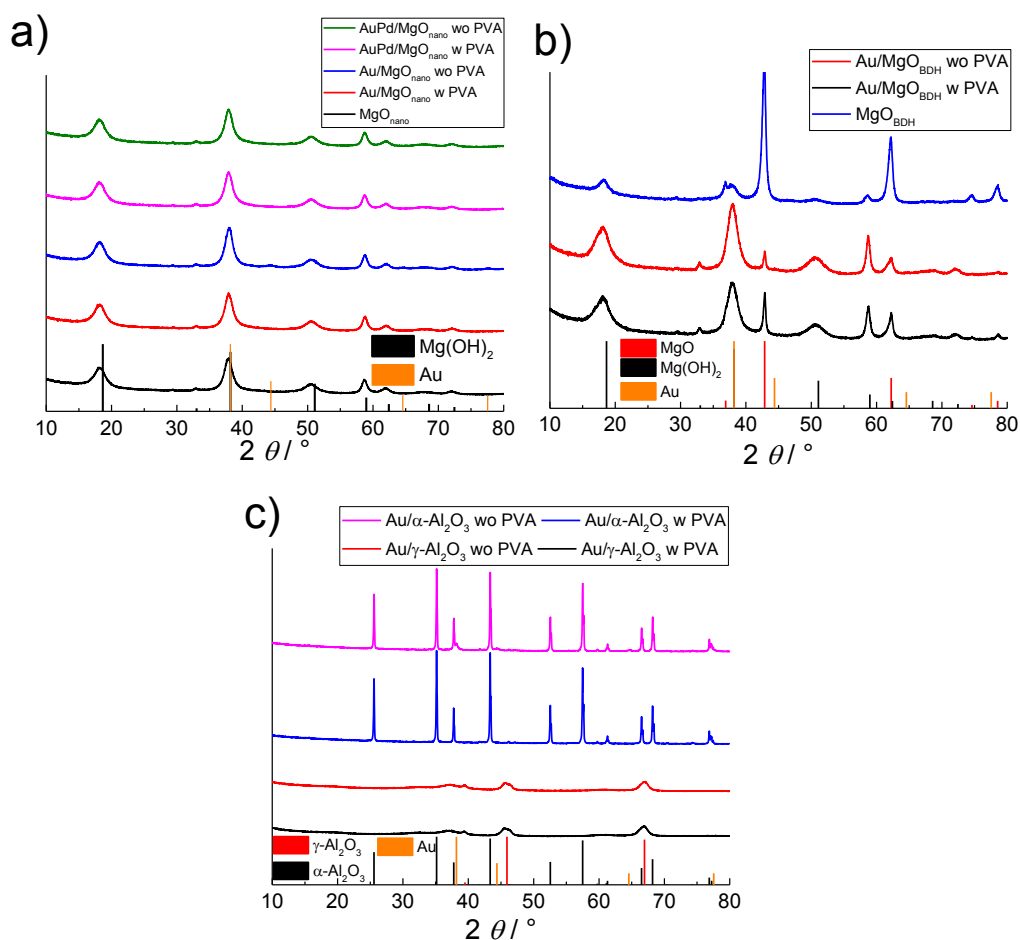


Figure S1. XRD patterns of a) Au/MgO_{nano} and AuPd/MgO_{nano} materials and of pristine MgO_{nano} as reference, b) Au/MgO_{BDH} materials and of MgO_{BDH} as reference, and of c) Au/α-Al₂O₃ and Au/γ-Al₂O₃ materials. Materials were prepared with (w) or without (wo) PVA addition during sol-immobilisation.

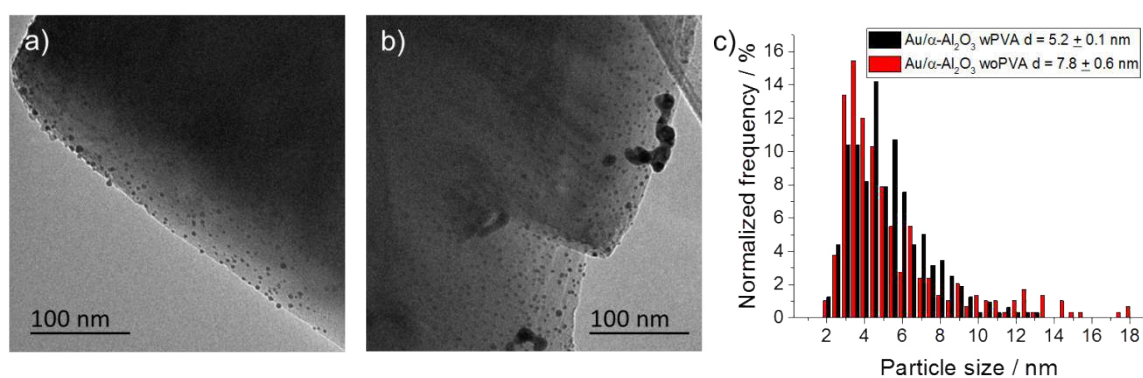


Figure S2. TEM micrographs of Au/α-Al₂O₃ prepared with a) and without b) PVA by sol-immobilization. c) Histograms of particle size distributions for Au NPs (at least 300 counts for each sample).

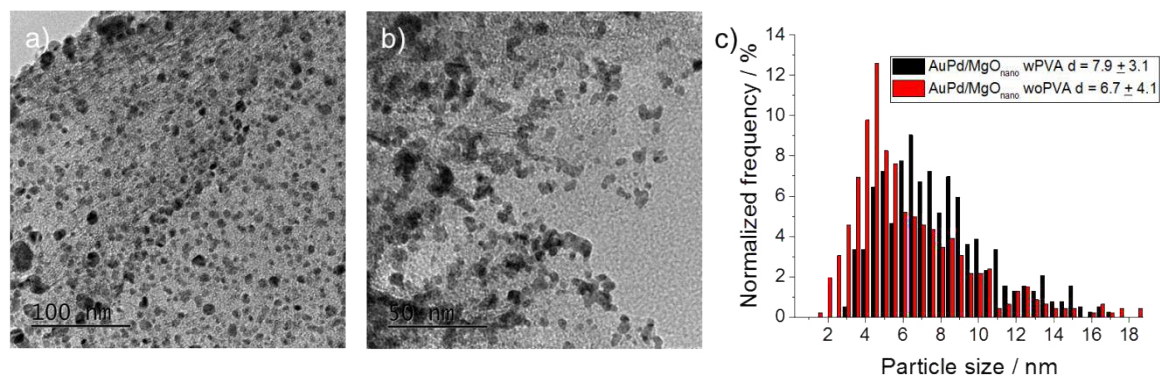


Figure S3. TEM micrographs of AuPd/MgO_{nano} prepared with a) and without b) PVA by sol-immobilization. c) Histograms of particle size distributions for Au NPs (at least 400 counts for each sample).

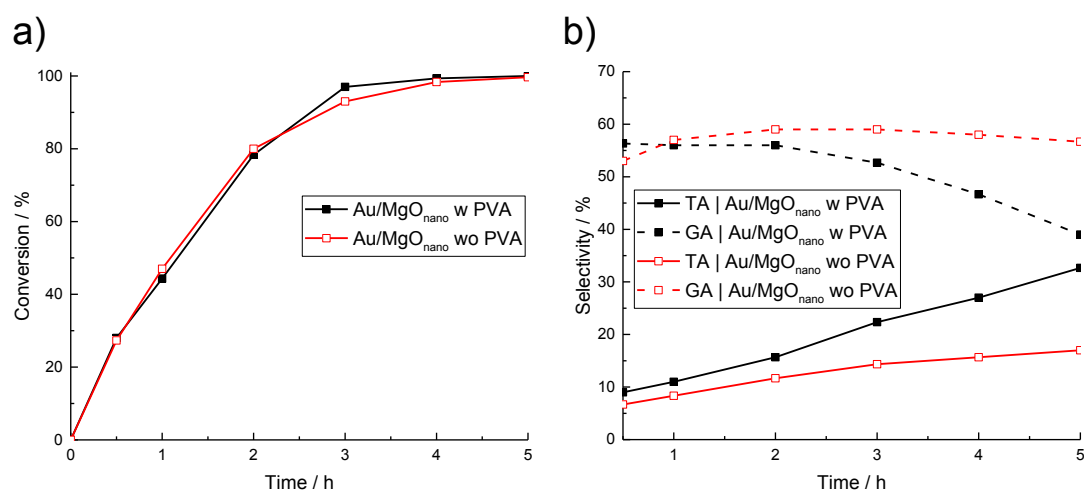


Figure S4. Conversion and selectivity profiles for glycerol oxidation over 1 wt% Au/MgO_{nano} catalysts prepared with (w) and without (wo) PVA during sol-immobilisation. Reaction conditions: 0.3 M glycerol, 2:1 NaOH/glycerol, 500:1 glycerol/metal, 10 mL, 60 °C, 3 bar O₂, stirring speed 1200 rpm. TA: tartronic acid; GA: glyceric acid. Hollow forms denote PVA-free catalysts; solid lines indicate TA selectivity and dashed lines indicate GA selectivity.

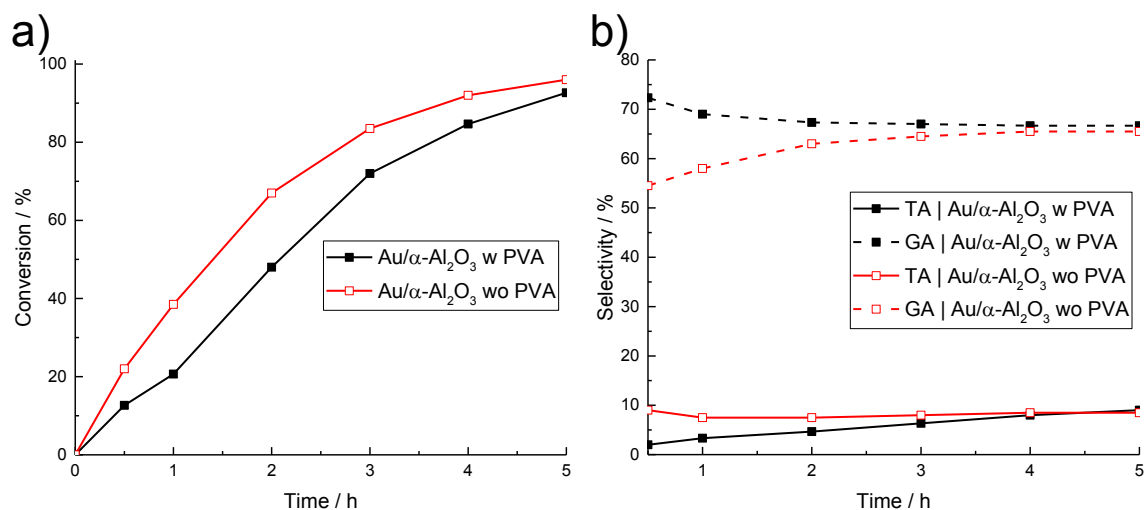


Figure S5. Conversion and selectivity profiles for glycerol oxidation over Au/α-Al₂O₃ catalysts prepared with (w) and without (wo) PVA during sol-immobilisation. Note that the catalyst prepared with PVA was only loaded with 0.1 wt% Au and the one without PVA was loaded with 1 wt%. Reaction conditions: 0.3 M glycerol, 2:1 NaOH/glycerol, 500:1 glycerol/metal, 10 mL, 60 °C, 3 bar O₂, 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.

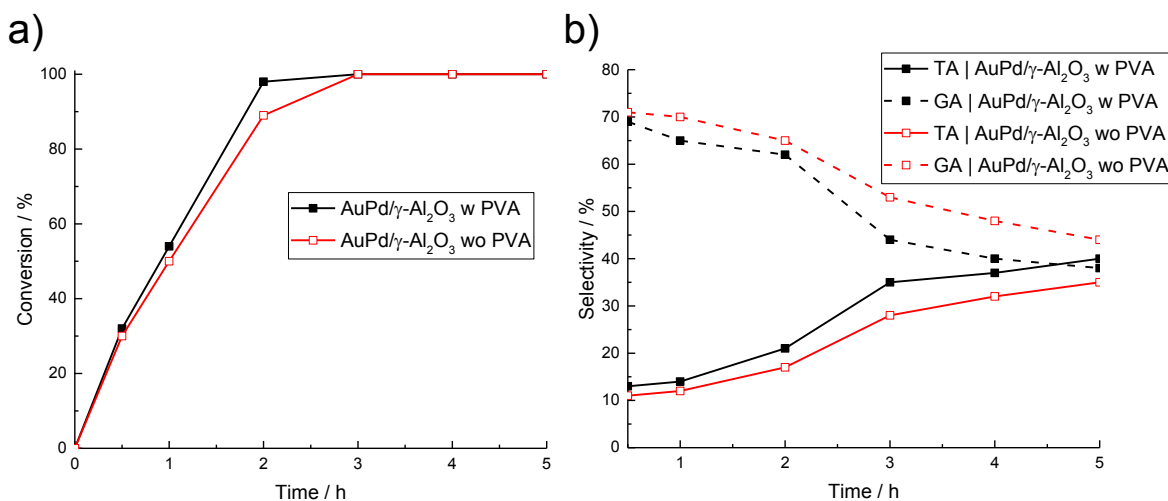


Figure S6. Conversion and selectivity profiles for glycerol oxidation over 1 wt% AuPd/γ-Al₂O₃ catalysts prepared with (w) and without (wo) PVA during sol-immobilisation. Reaction conditions: 0.3 M glycerol, 2:1 NaOH/glycerol, 385:1 glycerol/metal (based on Au), 10 mL, 60 °C, 3 bar O₂, stirring speed 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.