

Electronic Supplementary Information (ESI)

Crystal structure tailoring of Au–Cu alloy NPs using the embedding film matrix as template†

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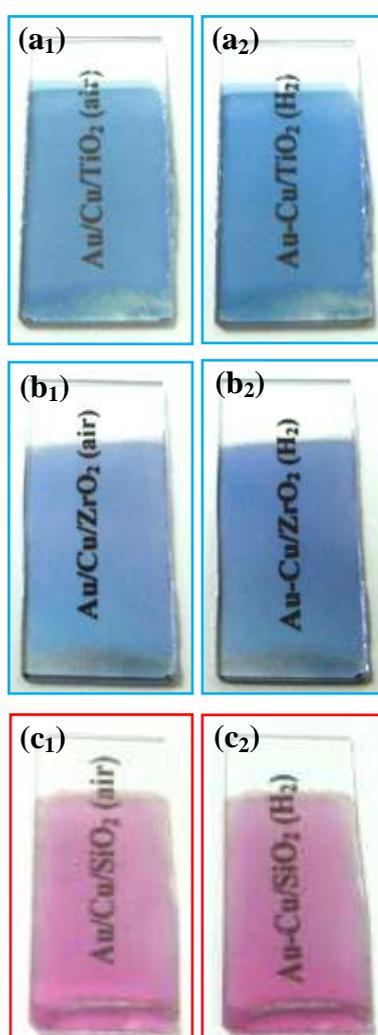


Fig. S1 Photographs of the Au/Cu doped MO₂ films (M=Ti, Zr and Si) heat-treated in air and subsequently in H₂-Ar atmospheres. (a₁), (b₁) and (c₁) are the Au/Cu doped TiO₂, ZrO₂, SiO₂ films heat-treated at 500 °C in air, respectively. The same air-annealed films were heat-treated at 500 °C in H₂-Ar atmosphere which are shown in (a₂), (b₂) and (c₂).

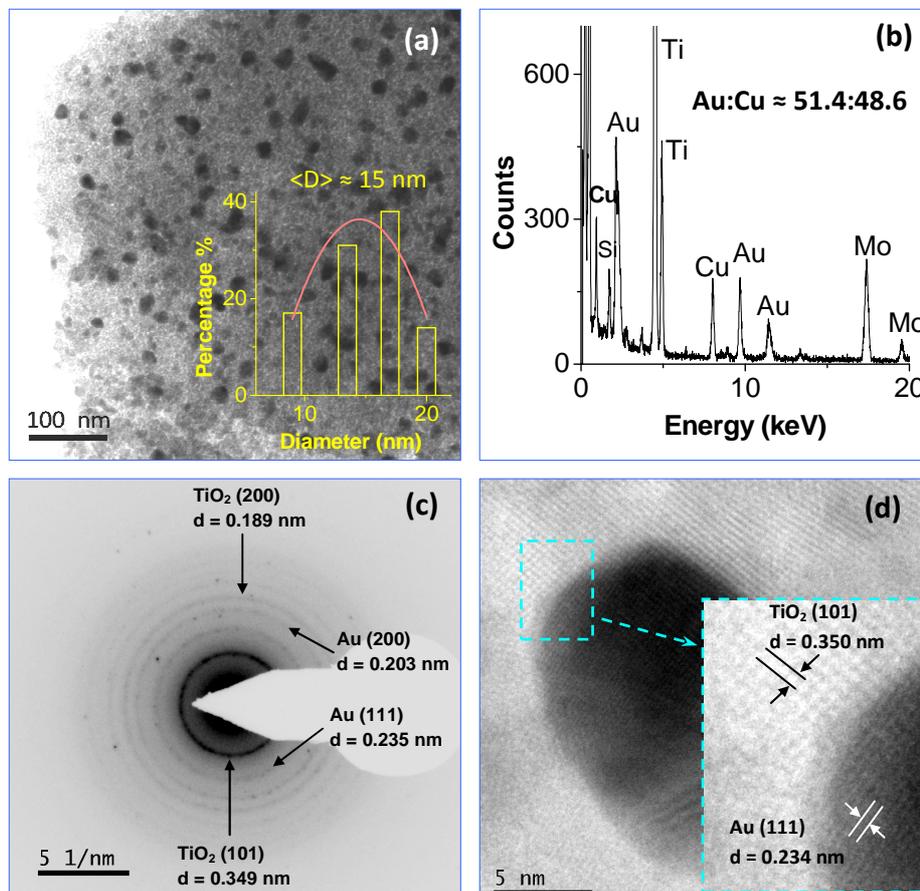


Fig. S2 TEM studies of the Au/Cu doped TiO₂ film heat-treated at 500 °C in air. (a) Bright field TEM image; inset of (a) shows the size distribution of the NPs. (b) EDS and (c) SAED patterns taken from the bright field TEM image with labeling. HRTEM image showing crystalline fringes corresponding to anatase TiO₂ and Au NP; inset shows the magnified view of the portion indicated by the dashed cyan enclosure.

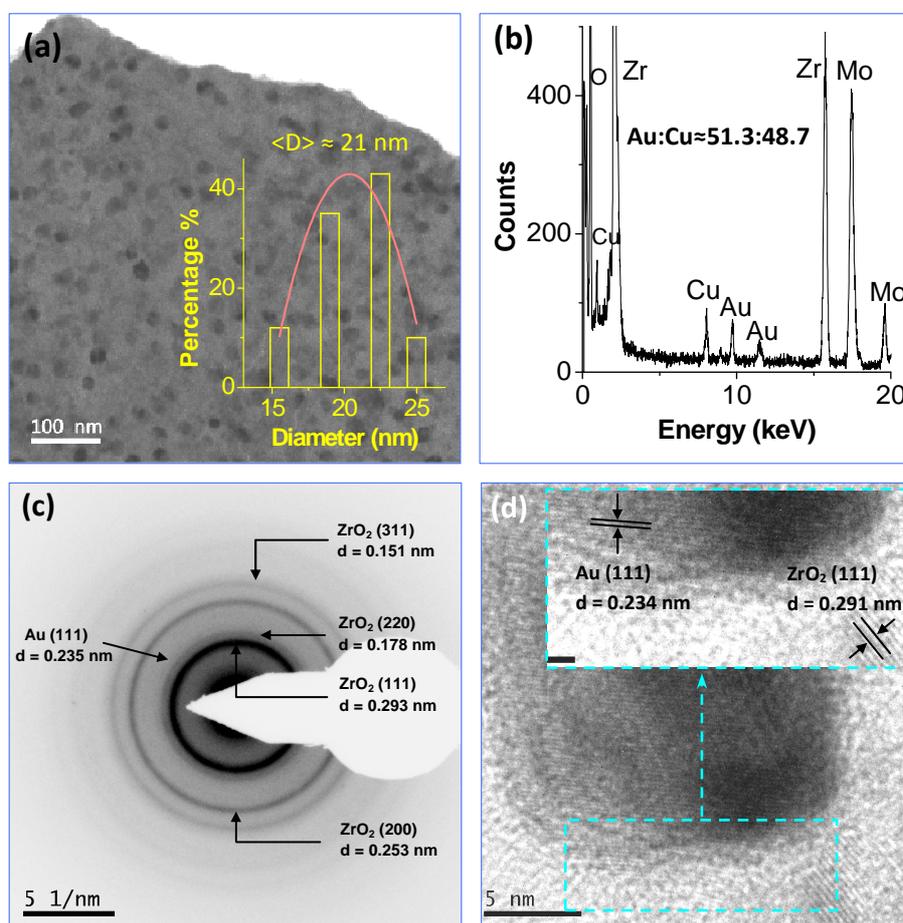


Fig. S3 TEM images of Au/Cu doped ZrO₂ film annealed at 500 °C in air. (a) Bright field TEM image showing the embedded NPs. The inset of (a) shows the size distribution of the NPs. (b) EDS and (c) SAED patterns taken from the bright field TEM image with labeling. (d) HRTEM image showing crystalline fringes corresponding to ZrO₂ and Au NP; inset shows the magnified view of the portion indicated by the dashed cyan enclosure.

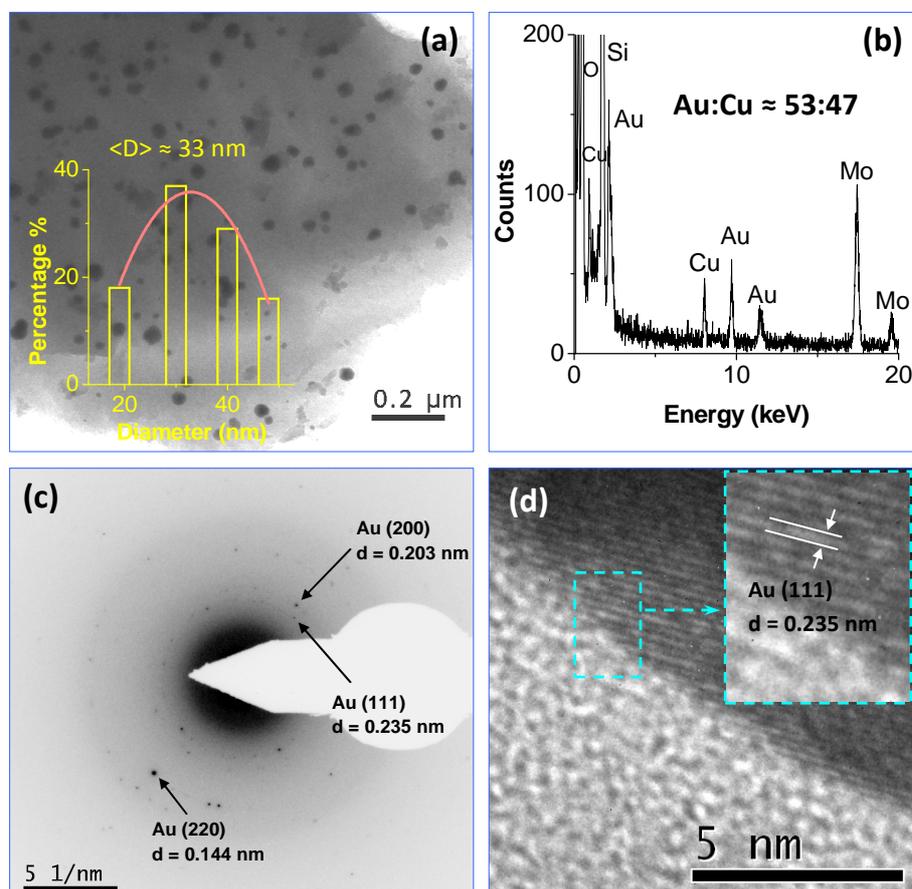


Fig. S4 TEM images of Au/Cu doped SiO₂ film after annealing at 500 °C in air. (a) Bright field TEM image showing the embedded NPs; inset shows the size distribution. (b) EDS and (c) SAED patterns taken from the bright field TEM image with labeling. (d) HRTEM image showing crystalline fringes corresponding to the Au NP; inset shows the magnified view of the portion indicated by the dashed cyan enclosure.