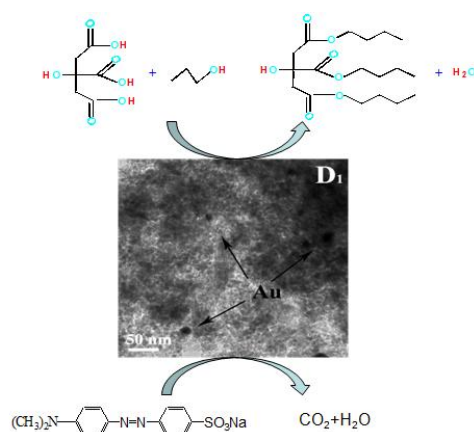


## Graphical abstract



Sulfated  $\text{SO}_4^{2-}/\text{Au-TiO}_2$  nanoparticles exhibited the best catalytic activity for the synthesis of citric acid *n*-butyl acetate (CABu) in the esterification reaction of citric acid (CA) with *n*-butyl alcohol (nBuOH) and in the decomposition of methyl orange (MO), which has great potential applications in esterification reactions and wastewater treatments.