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Effects of Plasmon Excitation on Photocatalytic Activity of Ag/TiO₂ and Au/TiO₂ nanocomposites¹ DINKO CHAKAROV, RAJA SEL-LAPPAN, Chalmers University of Technology, NISFD TEAM — Model composite photocatalysts consisting of undoped TiO₂ films and optically active Ag or Au nanoparticles (NP) were prepared and examined in order to address the role of plasmon excitation in their performance. The particles were either in direct contact or isolated by thin SiO₂ layer from TiO₂. We found, as measured for the reactions of methanol and ethylene oxidation in two different photoreactors, that composites show always enhanced (up to x100) activity compared to pure TiO₂. Interfacial charge transfer between TiO₂ and NPs plays major role for the enhancement. Plasmonic near-, far-field and thermal effects are present but do not dominate.

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