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Decoration of photocatalytic TiO_2 particles by cobalt clusters

ABSTRACT. Titanium dioxide particles coated by cobalt nanoclusters have been prepared by a novel electroless deposition method. The presence of the Co clusters on the TiO_2 surface was confirmed by measuring the temperature dependence of magnetization. Optical spectroscopy revealed a significant increase of light absorption due to the Co clusters. Electron paramagnetic resonance (EPR) spectroscopy was used to quantify the photocatalytic production of radicals, which measurement could be used to determine the optimum cobalt deposition time for maximizing photocatalytic radical production.

Keywords: electron paramagnetic resonance, EPR, hydrogen, hydrogen economy, magnetometry, optical spectroscopy

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