Hydrogen generating photocatalysts: from synthesis to photocatalysis

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Abstract: A range of supramolecular assemblies have been synthesised by the group and studied for their ability to generate hydrogen. Results from intramolecular Ru-Pt/Pd assemblies, to photosensitizers based on porphyrins, BODIPYs and polymers will be presented. The photocatalytic behaviour with respect to hydrogen generation of these compounds and their ultrafast photophysical properties will be presented as a function of the nature of the photosensitiser, peripheral ligand, the bridging ligand and the catalytic centre. The results obtained by us show how subtle differences in the chemical composition of the photocatalysts can influence intramolecular photoinduced electron transfer processes and the overall photocatalytic efficiency in solution. Also included will be more recent studies as we move from solution towards surface immobilisation.