Solar Conversion of CO_2 into Methanol

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Abstract

The new porous structure with metal nodes and organic linkers is used as a photocatalyst for solar conversion of CO_2 and water into methanol and it was found that metal nodes and organic linkers give the important roles for the efficient electron transition and its fast separation. The metal traps the electrons photo-generated from organic linker via light absorption to activate CO_2. Metal nodes also prevent the electron-hole recombination such a way to enhance the probability for reduction of CO_2. Also, we conclude that carboneous radicals such as carbon monoxide and protons formed methanol by the help of electrons separated on metal nodes.