Photocatalytic Methanol Reforming for Hydrogen Production

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The photocatalytic decomposition of aqueous methanol solution has been investigated using $NiO/La_2Ti_2O_7$ and $NiO/Sr_2Nb_2O_7$ photocatalysts. These are known as highly efficiency Layered perovskite photocatalysts which are active under UV light irradiation. There are optimum conditions for the hydrogen evolution, changing a molar ratio(H_2O/methanol). Also hydrogen evolution rate can be enhanced by adding NaCl which is plentiful element in the seawater. Cocatalysts on the photocatalyst can improve the photocatalytic activities. We studied the effect of bimetal loading on the photocatalyst. Ni-Pt bimetal loaded photocatalyst shows higher activities comparing to single metal loaded photocatalysts. In order to investigate the decomposition mechanism of aqueous methanol solution, isotope analysis was performed using the quadrupole mass spectrometer.