

## Hydrogen Production by the Photocatalytic Effects in the Microwave Water Plasma

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Currently, hydrogen has been produced by Steam Reforming or partial oxidation reforming processes mainly from oil, coal, and natural gas and results in the production of CO<sub>2</sub>. However, these are influenced greatly on the green house effect of the earth. so it is important to find the new way to produce hydrogen utilizing water without producing any environmentally harmful by-products.

In our research, we use microwave water plasma and photocatalyst to improve dissociation rate of water. At low pressure plasma, electron have high energy but density is low, so temperature of reactor is low. This may cause of recombination in the generated hydrogen and oxygen from splitting water. If it want to high dissociation rate of water, it is necessary to control of recombination of the hydrogen and oxygen using photocatalyst. We utilize the photocatalytic material(TiO<sub>2</sub>, ZnO) coated plasma reactor to use UV in the plasma. The quantity of hydrogen generated was measured by a Residual Gas Analyzer.