

## Steam reforming of volatile fatty acids in acid fermentation

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Catalytic steam reforming of Volatile Fatty Acids (VFAs), a liquid derived from fermentation of biomass, may be a viable process of renewable hydrogen production. Acetic acid is one of the major constituents of VFAs, and for this reason, it is used as a model compound to study its reaction network under steam reforming conditions over Pt catalyst supported on Al<sub>2</sub>O<sub>3</sub>. Pt/Al<sub>2</sub>O<sub>3</sub> yields steam reforming products (i.e., H<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub>) and conversion and yields dropped slightly with time on course. This report clarifies cause of the deactivation during steam reforming of acetic acid. It was found that many products can be formed from acetic acid on Al<sub>2</sub>O<sub>3</sub>, such as acetone. In order to develop durable catalysts for steam reforming of VFAs, support should be designed to enhance activation of water, minimize dehydration reactions and thus oligomer formation.