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## Hydrogen Production from Reaction of Apple Pomace with Water over Commercial Steam Reforming Ni Catalysts

Junpei Takahashi<sup>1)</sup> and Toshiaki Mori<sup>1)</sup>

1) Dept. of Frontier Materials Chemistry, Faculty of Science and Technology, Hirosaki University

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 $\rm H_2$  production from biomass is an important area of research. Steam reforming of apple pomace at high temperatures at > 973 K was carried out over a commercial steam reforming Ni catalyst using a fluid bed reactor. The Ni catalyst could catalyze the reaction between apple pomace and  $\rm H_2O$  to produce  $\rm H_2$ . The balance between the reactant apple pomace and the product gases together with thermogravimetric data suggested that apple pomace was decomposed to  $\rm H_2$ , CO, CH<sub>4</sub>, CO<sub>2</sub> and carbon deposits prior to steam reforming, and the resultant deposited carbon reacted with  $\rm H_2O$  to produce  $\rm H_2$ , CO, and CO<sub>2</sub>. This conclusion was supported by the observation that potassium and calcium compounds added to the Ni catalyst considerably increased the extent of gasification, probably by promotion of the reaction between deposited carbon and  $\rm H_2O$ . Enhancement of the reaction between deposited carbon and  $\rm H_2O$  is a possible way to develop a high performance system for  $\rm H_2$  production from steam reforming of biomass.

Keywords: <u>Steam reforming</u>, <u>Hydrogen production</u>, <u>Biomass</u>, <u>Apple pomace</u>, <u>Nickel</u> <u>catalyst</u>, <u>Potassium promoter</u>

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