

## Pyrolysis of Biomass using Cobalt-based Catalysts with changing supports for H<sub>2</sub> production

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Studied on the catalytic pyrolysis of biomass using Co-based catalysts with different supports to produce H<sub>2</sub>-rich product gases. In these catalysts, Cobalt was maintained at the composition of 30wt%; and four types of supports are used (Al<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Cr<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub>) at its of 70wt%. The catalysts were prepared by co-precipitation method and the papers were adapted as biomass sample. In the process of pyrolysis, 1g of biomass was mixed with 0.1g of each catalyst as 10% of the sample weight.. The temperature was increased from room temperature to 800°C at the heating rate of 10°C/min. Most catalysts had shown to increase the yield of H<sub>2</sub> with increasing the temperature and had shown best result at 800°C for the residence time of 10min except Co/ZrO<sub>2</sub> catalyst. The volume of H<sub>2</sub>-gas had reached the highest value (8.11ml) in Co/Cr<sub>2</sub>O<sub>3</sub>. Its accumulated H<sub>2</sub> volume from 600°C to 800°C was the value of 10.3ml. From the results it can be concluded that, the change of supports in the catalysts have influenced in the H<sub>2</sub>-gas production. Among all the catalysts, Co/Cr<sub>2</sub>O<sub>3</sub> has shown the best during the process of pyrolysis.