

### Catalytic Pyrolysis of the Alga *Saccharina Japonica* using Co/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Catalyst

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*Saccharina Japonica* (*S. Japonica*) has the potential to be the source of liquid fuel. The main component in the bio-oil, dianhydromannitol (DHM), can be obtained by fast non-catalytic pyrolysis. However, when investigating over Co and Ni catalyst supported on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> in the micro tubing reactor with various loading amount of catalysts from 2 wt.% to 8 wt.% at temperature range of 360–400°C, the amount increased more. Compared with Ni/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalyst, Co/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalyst significantly affected pyrolysis of *S. japonica*, showing the increase of bio-oil yield. Applying over 2 wt.% catalyst loading and operating at higher pyrolysis temperature reduced the catalytic activity possibly due to the increased viscosity that limited the diffusion of three-phase reaction. Nevertheless, the 40.7 wt.% bio-oil yield from the pyrolysis of *S. Japonica* at 380°C and 5 min of residence time was higher than that attempted in the past with maximum yield of 28.78 wt.%.