

[Non-isothermal pyrolysis properties of *Laminaria japonica*](#)

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Abstract:

The pyrolysis of *Laminaria (L.) japonica* was examined using non-isothermal analytical pyrolysis techniques, such as thermogravimetric (TG) and multi-shot pyrolyzer (Py)-gas chromatography/mass spectrometry (GC/MS) analysis. TG, derivative TG curves, and the apparent activation energy suggested that the decomposition of *L. japonica* has three thermal decomposition stages. The average mass spectra and multi-shot Py-GC/MS chromatograms obtained at each thermal decomposition stage confirmed the main decomposition reaction at each thermal zone. At the first stage, the decomposition of lipids and carbohydrates was initiated. The main decomposition of carbohydrates occurred at the second stage. At the final stage, proteins were decomposed and char intermediates were stabilized by supplying a higher temperature. A low activation energy at the second stage and the presence of metals in *L. japonica* suggests that during the non-isothermal pyrolysis of *L. japonica*, the catalytic effect is enhanced and involves the decomposition of carbohydrates.

* Excerpted from online journal website (Click the title)

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EGA/Py-3030D, MJT-1030E, UA-DTM-2.5N, UA-5, F-Search