

## Hydrothermal Degradation of Sodium Alginate into Value-added Chemicals in Sub-critical conditions

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Alginate from sea algae, especially brown sea weeds, is one of bio-polymer materials mainly composed of hexuronic acid monomers, mannuronic acid and guluronic acid. Hydrothermal treatment under sub-critical water conditions leads to convert alginate into valuable organic compounds. The alginate decomposes to mannuronic acid or guluronic acid monomers by selective cleavage of 1,4-glycosidic bonds. As the following step, the monomers convert into organic compounds, such as carboxylic acids and dicarboxylic acids, by decomposition of monomers' ring structure. In this research, we investigated the effects of various experimental parameters, such as temperature, time, alginate concentration and initial pH of reactant, on the degree of depolymerization of alginate and distribution of products. Various characterization techniques, such as GPC, MALDI-TOF-MS, GC-MS, LC-MS and HPLC, were employed to perform qualitative and quantitative analysis for complex mixtures of organic compounds.