

Effect of reaction conditions on liquefaction yield of algal biomass

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Algal biomass is one of the promising alternative sources of sustainable energy because of its increased CO₂ absorption and rapid growth which leads to reduction in global warming. In addition to that, it does not have to compete with food crops for its production as it grows naturally in sea because of appropriate environment for its growth. In this study, effect of reaction conditions like temperature, residence time and biomass to solvent ratio on liquefaction yield of macroalgae is observed using alcohol as a solvent. Bio-oil yield increases with time and temperature and decreases with biomass to solvent ratio. Optimum time can be chosen in accordance with reaction temperature; the higher the temperature above supercritical point, the lesser the time. Decreased biomass to solvent ratio up to a certain level is favorable for higher bio-oil yield. Bio-oil contains higher amount of oxygen which decreases its HHV and an upgrading step is recommended before it is used as an alternative of crude oil. The solid residue has high ash content and contains a large amount of metals like sodium, potassium, calcium, magnesium etc.