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**Hydrothermal Liquefaction of High- and Low-Lipid Algae: Mass and Energy Balances**

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**Abstract**

Hydrothermal liquefaction (HTL) of high-lipid microalgae *Nannochloropsis salina* (*N. salina*) and low-lipid microalgae *Galdieria sulphuraria* (*G. sulphuraria*) were run under subcritical conditions (310-350 °C and 10-17 MPa) in a 1.8 L batch autoclave system. HTL mass and energy balances for both species were compared under different operating conditions to predict the optimum reaction conditions for new algae strains based on their feedstock composition. Bio-crude oils and chars were characterized by bomb calorimetry, elemental analysis, inductively coupled plasma optical emission spectrometry (ICP-OES), and thermogravimetric analysis (TGA). Under the optimized conditions, 59 wt.% and 31 wt.% bio-crude oil yields were obtained from HTL of *N. salina* and *G. sulphuraria*, respectively. Meanwhile, 85% and 59% of the

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