

Bio-crude from Hydrothermal Liquefaction of Algae and Upgrading

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Abstract

Biobased fuels and chemicals have significant potential in addressing environmental issues, national energy security benefits, and employment opportunities. Algae have gained a significant attention as biomass for biofuel production because of its high productivity, flexibility in growing condition and its tunable biochemical properties. Among the different pathways to produce bio-oils from algae, hydrothermal liquefaction (HTL) has been regarded as a promising technique due to its acceptance of water as a reactant and reaction medium and also avoids energy-intensive drying process. However, HTL process produces bio-crude, which cannot be directly used as “drop-in” fuel or blended with petroleum fuels. Therefore, upgrading is performed to make it more desirable as a fuel. This presentation will cover the work on hydrothermal liquefaction of algae and upgrading in Adhikari’s lab at Auburn University.

Biography

Sushil Adhikari is an Alumni Professor and the Graduate Program Coordinator in the Biosystems Engineering Department at Auburn University. He is also the Director for the Center for Bioenergy and Bioproducts at Auburn University. Adhikari earned his B.S. degree in Mechanical Engineering from Tribhuvan University, Nepal, an M.S. degree from Asian Institute of Technology, Thailand in Energy Technology, and a Ph.D. degree from Mississippi State University in Biological Engineering. He is a registered professional engineer in the State of Alabama.

Adhikari teaches biosystems engineering classes and conducts research related to biofuels and bioproducts, especially in the field of thermochemical conversion. His research efforts are particularly focused on biomass gasification, pyrolysis, algae liquefaction and upgrading, anaerobic digestion (AD) and hydrogen production. Adhikari has published 110 peer-reviewed journal articles and 8 book chapters, and has been cited more than 6000 (Google scholar) times.

Adhikari was the recipient of Auburn University (AU) President’s Outstanding Collaborative Units Award in 2012 and the Auburn University Provost’s Award for Faculty Excellence in Undergraduate Research Mentoring in 2017. He received the American Society of Agricultural and Biological Engineers (ASABE) New Holland Young Researcher Award in 2013 and was also named as “World’s Most Influential Mind” by Thomas Reuters in 2014.

This seminar counts towards the ME 600 seminar requirement for Mechanical Engineering graduate students.

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