

Carbon-Negative Biofuels from Gasification and Pyrolysis of Biomass



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Abstract:

The goal of this project is to study the production of carbon-negative biofuels via gasification and pyrolysis. Selected locally available biomass (animal manure, corn stover and distillers grains) will be converted to bio-oil, biochar and syngas (products) using these thermochemical processes. The bio-oil and syngas are used as liquid and gaseous fuels whereas, biochar, which contains the minerals along with carbon, can be returned to the soil. The combined application of the products will help sequester carbon and phosphorus from the biomass while producing biofuels, which may otherwise be released as carbon dioxide in the atmosphere and phosphorus contamination in the groundwater. The results of this study will show the effects of process operating conditions on the desired properties of the biochar as well as bio-oil and syngas for their respective applications.