Samira Lotfi et al., J Fundam Renewable Energy Appl 2018, Volume: 8
DOI: 10.4172/2090-4541-C6-065

Biomass tar removal using a wet packed-bed scrubber

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One of the main barriers to the commercialization of small-scale, biomass gasification combined heat and power (CHP) technology is lack of cost-effective tar removal from the syngas. During gasification, a wide spectrum of aromatic hydrocarbons containing single to multiple ring aromatics, referred to as tar, are formed. Tar is problematic because it can condense in process piping, plug filters and form damaging deposits inside engines using tar containing syngas. In order to remove these tar components, we propose to build and evaluate a wet packed-bed scrubber using woodchips as a packing material and waste cooking oil as a scrubbing media. The study will evaluate the influence of the effect of oil/gas ratio, oil temperature and replacing part of woodchips with fine woodchips as a packing media on tar model compound removal from gas.

Biography

Samira Lotfi is a chemical engineer with 10 years of experience studying chemical process design, process simulation and kinetic parameter estimation for various applications such as catalysis. Prior to joining the NRC, she collaborated in several projects on conversion of biomass to energy and chemicals during her PhD at Ecole Polytechnique de Montréal. She joined NRC EME in August 2016 as a research associate in the water treatment group and more recently joined the low-carbon fuels and clean combustion team. As a researcher, she has contributed and/or managed various projects in such areas as syngas clean-up, gasification modeling and bioreactor analysis and process design.

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