

# Bio-oil production through biomass pyrolysis and upgrading research

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Received : 27.09.2017 ; Accepted : 25.03.2018

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■ **ABSTRACT** : Biomass can be utilized to produce bio-oil, a promising alternative energy source for the limited crude oil. Biomass can be converted to bio-fuel via different thermal, biological and physical processes. Among the biomass to energy conversion processes, pyrolysis has attracted more interest in producing liquid fuel. Pyrolysis processes may be conventional or fast pyrolysis, depending on the operating conditions that are used. The heart of a fast pyrolysis process is the reactor and considerable research development has focused on reactor types. Different types of reactor are used for bio oil production such as fluidized-bed reactor Ablative type, vacuum pyrolysis reactor, rotating cone reactor, auger pyrolysis reactor, pyros pyrolysis reactor, plasma reactor, microwave reactor and solar reactor. To improve the bio-oil production from biomass. Scientific and technical developments towards improving bio-oil yield and quality to date are reviewed, with an emphasis on bio-oil upgrading research.

■ **KEY WORDS** : Bio-oil, Biomass, Fast pyrolysis, Pyrolysis reactor, Bio-oil upgrading

■ **HOW TO CITE THIS PAPER** : Khole, Priyanka R. and Shukla, Saumya (2018). Bio-oil production through biomass pyrolysis and upgrading research. *Internat. J. Agric. Engg.*, **11**(1) : 257-263, DOI: 10.15740/HAS/IJAE/11.1/257-263.