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[Eleni V. Antonakou](#), [Vasilios S. Dimitropoulos](#),
[Angelos A. Lappas](#)

PRODUCTION AND CHARACTERISATION OF BIO-OIL FROM CATALYTIC BIOMASS PYROLYSIS

ABSTRACT

Biomass flash pyrolysis is a very promising thermochemical process for the production of bio-fuels and/or chemicals.

However, large-scale applications are still under careful consideration, because of the high bio-liquid upgrading cost. In this paper the production of bio-liquids from biomass flash pyrolysis in a single stage catalytic process is being investigated using a novel once through fluid bed reactor. This biomass pyrolysis unit was constructed in CPERI and comprises of a catalyst regenerator, a biomass-vibrating hopper, a fluidization reactor (that consists of an injector and a riser reactor), a product stripper along with a hot cyclone and a filter housing and finally a product condensation/recovery section. The unit can process up to 20 gr/min of biomass (50-800 μ m) and can circulate up to 300 gr/min of catalyst or inert material. The experiments performed in the pilot plant showed that the unit operates without problems and with satisfactory mass balances in a wide range of experimental conditions both in the absence and presence of catalyst. With the incorporation of an FCC catalyst in the pyrolysis, the physical properties of the bio-oil produced changed, while more stable bio-oil was produced.

KEYWORDS

[biomass](#), [catalytic pyrolysis](#), [bio-oil characterisation](#)

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