

## Summer Research Program 2011/2012

### *Project Title: Reactive Flash Volatilisation of Cellulose to Produce Synthesis Gas*

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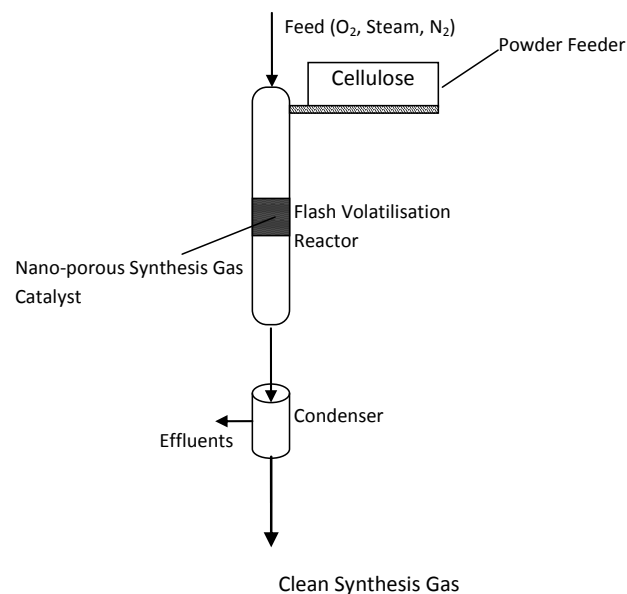
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#### Objective

This research project aims to convert cellulose derived from waste biomass into tar free synthesis gas for biofuels production by using a fixed bed catalytic reactor employing reactive flash volatilisation.

#### Description

In this proposed process we combine fast pyrolysis, gasification, tar-cleaning and the water-gas-shift reaction in one reactor. Cellulose will be fed using a powder screw feeder. The air + steam feed reacts with the cellulose on the catalyst bed and is converted to tar-free synthesis gas. The aim is to develop a suitable catalyst and reaction conditions to achieve a high yield and selectivity of CO and H<sub>2</sub>.



Pre-requisites - CHE3164 Reaction engineering