BAMI Seminar – September 2016

Pramod Sripada, PhD Student, Monash University

Friday 23rd September 2016, 12.30PM to 1.30PM
Room G03, BioPRIA, 15 Alliance Lane (Building 59), Clayton Campus

Moderator: Anurag Parihar, PhD Student, BioPRIA/Department of Chemical Engineering Monash University

Abstract:

This study assesses the gasification performance of Pine bark in the temperature range of 1000-1200 °C with CO2 (10-40% in N2) as the gasifying agent in a lab-scale atmospheric entrained flow reactor. The effect of temperature and CO2 concentration in the feed gas on the carbon conversion, syngas composition, and emission of polluting species such as HCN and NH3 has been investigated. In addition, complementary solid residue (char) analysis such as the particle size distribution and char morphology have been performed in order to characterize the fragmentation behaviour. Further, the mineral matter transformation at elevated temperatures has been analysed through X-ray diffractograms of the chars and comparing with the thermochemical equilibrium predictions. It was observed that the carbon conversion increased with increasing temperature and CO2 concentration. The carbon conversion of ~98% conversion was achieved at 1200 deg C. The gas phase products include CO, CO2, H2 and CH4 whose composition varied as a function of both CO2 concentration in feed and temperature.

Presentation and Q&A session will be from 12.30PM – 1.00PM. Lunch will be served at 1.00PM.

Enquires: BAMI Student Chapter coordinators Anurag Parihar or Jinhuo Dai.

Lionel Longe, PhD Student, Monash University

Friday 9th September 2016, 12.30PM to 1.30PM
Room G03, BioPRIA, 15 Alliance Lane (Building 59), Clayton Campus

Moderator: Jinhuo Dai, PhD Student, Monash University

Abstract:

Lignin is the second most abundant biopolymer just after cellulose. Its structure is a complex 3D network of phenol compounds liked by C-C (carbon-carbon) or C-O-C (carbon-oxygen-carbon) bonds, thus representing a promising source of aromatic compounds. However, lignin exploitation is highly hindered by the complexity of breaking it down to small elements. Contrary to the method that are currently used, which usually require high pressure or high temperature, we consider here a greener enzymatic pathway towards lignin degradation. Indeed, in nature microorganism such as fungi or bacteria naturally degrade lignin in mild conditions through the use of different enzymes cocktails. Redistribution mechanisms, known as one way to depolymerise lignin, will be of particular interest. Furthermore, the second part of this work considers repolymerisation from lignin fragments – monomers or oligomers and the study of their properties. Focus is given to new polymerisation pathways that have never been reported for lignin fragments.

Presentation and Q&A session will be from 12.30PM – 1.00PM. Lunch will be served at 1.00PM.

Enquires: BAMI Student Chapter coordinators Anurag Parihar or Jinhuo Dai.