

## Optimization of levulinic acid from lignocellulosic biomass using a new hybrid catalyst

### Abstract:

Conversion of glucose, empty fruit bunch (efb) and kenaf to levulinic acid over a new hybrid catalyst has been investigated in this study. The characterization and catalytic performance results revealed that the physico-chemical properties of the new hybrid catalyst comprised of chromium chloride and HY zeolite increased the levulinic acid production from glucose compared to the parent catalysts. Optimization of the glucose conversion process using two level full factorial designs (2<sup>3</sup>) with two center points reported 55.2% of levulinic acid yield at 145.2°C, 146.7min and 12.0% of reaction temperature, reaction time and catalyst loading, respectively. Subsequently, the potential of efb and kenaf for producing levulinic acid at the optimum conditions was established after 53.2% and 66.1% of efficiencies were reported. The observation suggests that the hybrid catalyst has a potential to be used in biomass conversion to levulinic acid.