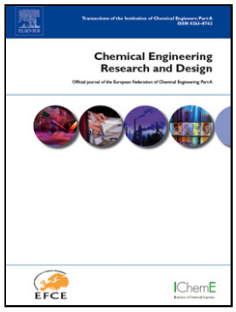

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PII: S0263-8762(17)30172-7
DOI: http://dx.doi.org/doi:10.1016/j.cherd.2017.03.029
Reference: CHERD 2627

To appear in:

Received date: 6-8-2016
Revised date: 11-2-2017
Accepted date: 27-3-2017

Please cite this article as: Saidi, Majid, Jahangiri, Alireza, Refinery Approach of Bio−oils Derived from Fast Pyrolysis of Lignin to Jet Fuel Range Hydrocarbons: Reaction Network Development for Catalytic Conversion of Cyclohexanone.Chemical Engineering Research and Design http://dx.doi.org/10.1016/j.cherd.2017.03.029

Refinery Approach of Bio−oils Derived from Fast Pyrolysis of Lignin to Jet Fuel Range Hydrocarbons: Reaction Network Development for Catalytic Conversion of Cyclohexanone

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Research Highlights

- ✓ Catalytic upgrading of lignin-derived bio-oil into the jet and diesel fuel range hydrocarbons is studied.
- ✓ A biorefinery approach for catalytic upgrading of bio-oil is proposed.
- ✓ The kinetic assessment of catalytic hydro-upgrading cyclohexanone is performed.
- ✓ One of the most detailed quantitative characterizations of catalytic upgrading is presented.
- ✓ Reaction network of cyclohexanone upgrading is developed.

Abstract

This study demonstrated that the bio−oil derived from fast pyrolysis of lignin was excellent candidate to be converted into the jet and diesel fuel range hydrocarbons by catalytic upgrading process. This research addresses specifically the kinetic and mechanism of cyclohexanone conversion using sulfided CoMo/ $\gamma-Al_2O_3$ catalyst in a fixed−bed flow reactor. The main routes of cyclohexanone upgrading included hydrodeoxygenations (HDO), dehydrogenation, hydrogenation and coupling. The selectivity−conversion analyses at different operating condition