Title: Understanding Lignin Depolymerization to Phenols via Microwave-Assisted Solvolysis Process

Authors: Piyali Dhar, R. Vinu

PII: S2213-3437(17)30415-3
DOI: http://dx.doi.org/10.1016/j.jece.2017.08.031
Reference: JECE 1826

To appear in:

Received date: 29-4-2017
Revised date: 6-8-2017
Accepted date: 20-8-2017

Please cite this article as: Piyali Dhar, R.Vinu, Understanding Lignin Depolymerization to Phenols via Microwave-Assisted Solvolysis Process, Journal of Environmental Chemical Engineeringhttp://dx.doi.org/10.1016/j.jece.2017.08.031

Understanding Lignin Depolymerization to Phenols via Microwave-Assisted Solvolysis Process

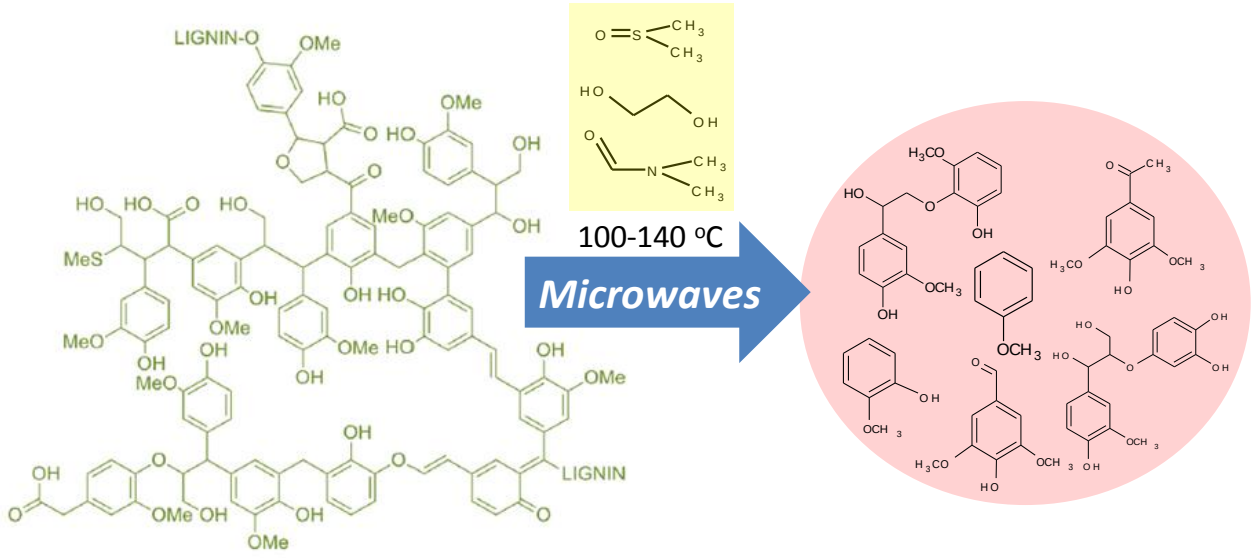
Piyali Dhar and R. Vinu*

Department of Chemical Engineering and National Center for Combustion Research and Development

Indian Institute of Technology Madras, Chennai - 600036, India

*Corresponding author. E-mail: vinu@iitm.ac.in. Phone: +91-44-22574187

Graphical Abstract



Highlights

- Microwaves converted alkali lignin to phenolics at low temperatures (100-140ºC)
- Reaction media constituted a homogeneous phase with solvents of varying polarity
- Time evolution of molecular weight distribution of lignin and phenolics were studied
- Phenolics include acetosyringone, guaiacol, syringaldehyde, anisole and lignin dimers
- Maximum phenolic yield (20 wt.%) was obtained with DMSO and DMF at 100ºC