

## SCREENING OF LIGNINS BY PYROLYSIS-GAS CHROMATOGRAPHY/MASS SPECTROMETRY

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Several lignins produced commercially were characterized using pyrolysis-gas chromatography/mass spectrometry (Py-GC/MS) technique. The research focused on characterization as well as high throughput screening of different commercial lignins, which can be considered as potential precursor for engineering materials such as, carbon foam and carbon fiber. Major peaks of each pyrograms were identified by matching the NIST library with mass spectral fragmentation patterns. Syringyl (S), guaiacyl (G) and hydroxyphenyl (H) units were identified from the phenolics originated due to the lignin fragmentation. S/G ratio was calculated based on the area of the corresponding lignin fragments. Cellulose and hemicellulose impurities present on those lignins fragmented into smaller organic molecules such as, acetic acid, furfural, and 2-furanmethanol during pyrolysis and were easily identified. Sugar impurities were reported in percentage area. Principal component analysis of the chemical fingerprints of those lignins clearly showed distinct clusters based on the feedstock characteristics.