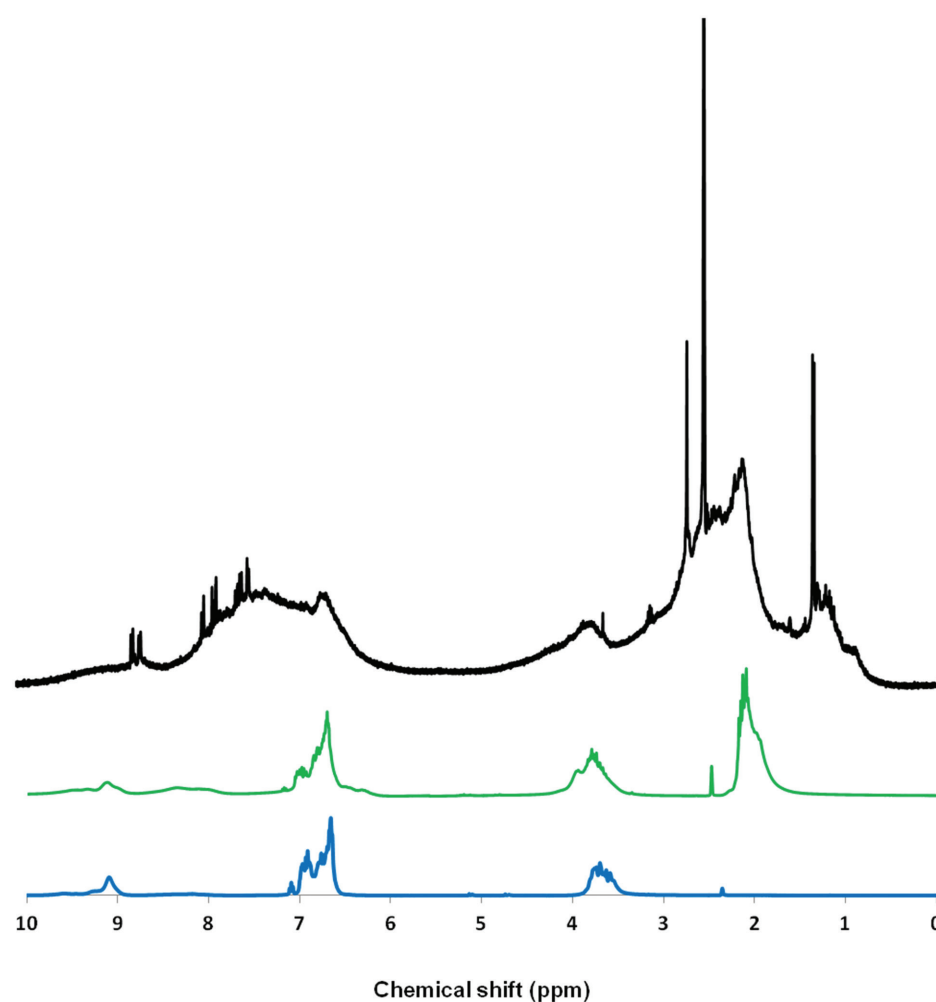


63

NMR is *Science*



Synthesized phenolic resin in d-DMSO

Anushka Vithanage, 2014

Chemistry Department | University of Maine

Field strength: 400 MHz

Why is this your favorite spectrum?

This sums up a big part of my early graduate work probing the area of sustainable and biomass based materials. This picture has three ¹H NMR spectra of different phenolic resins comparatively aligned; phenolic resins are extremely versatile material and commercially synthesized from phenol and formaldehyde. There is great interest in making these resins renewably so as to avoid dependence in petroleum-based phenol. My approach, synced with emerging bio-refinery concepts, probed convenient extraction of lignin based bio-oil to make resins. Bottom blue spectrum is commercial resin, top black spectrum is raw lignin bio-oil based resin, whereas middle green spectrum is the resin made from extracted fraction of bio-oil. It carried inherent properties coming from lignin bio-oil as seen in alkyl region but retains a significant similarity to commercial product! Also, the lignin bio-oil-based resin shows how complex these systems are to handle, and this comparative NMR representation reminds me of all the hardships faced and overcome in order to make a product that has promise! *Thank you!*