Dakota Bioprocessing Consortium
(DakotaBioCon)

South Dakota School of Mines and Technology
Rapid City, SD
Lignin

- Lignin - second most abundant after cellulose, 25-35% in biomass
- Biopolymer of lignin precursors - \( p \)-coumaryl, coniferyl and synapyl alcohols
- 50-60 million tons produced by the PPI annually
- Only 2% used commercially (low-value lignosulfonates), $300 million market
- Rest is used as low-cost fuel for heat generation
- Opportunities to utilize in production of high-value aromatics and polymers
- Potential revenue of up to $35 billion per year
Dakota Bioprocessing Consortium: DakotaBioCon
NSF EPSCoR Track 2 Grant: $6 million over 3 years

• Goals:
  • Build a long-term collaboration among 2 States (ND and SD) and 4 universities (NDSU, UND, SDSU and SDSM&T)
  • Develop a collaborative infrastructure for lignin bioprocessing to high-value lignin-derived products

• Objectives:
  • Convert lignin to LMW compounds using HT hydrotreatment and biodegradation
  • Elucidate reaction mechanisms
  • Design process/purification schemes to convert LMW precursors to valuable products
  • Develop new polymers
  • Build & sustain the DakotaBioCon research & education infrastructure
DakotaBioCon Research Roadmap

![Diagram of research roadmap]