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**Supply chain design for chemicals from biomass**

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CO2 emissions from human activity are causing climate change, with dramatic effects on basic needs such as food and water supplies. To reduce its carbon footprint, the chemical industry will need to switch to renewable energy and replace petroleum with biomass for the production of commodity and specialty chemicals. Electrochemistry has shown promise for producing chemicals from biomass and could also utilize variable renewable energy in small-scale distributed facilities. To demonstrate economic viability and sustainability of this new chemical production process, a supply chain network design is targeted to include process performance optimization under uncertainty. The supply chain design and energy management tasks are intended for a two-step chemical manufacturing process that ferments corn stovers and produce muconic acid, which is then transported to an electrochemical flow reactor located close to renewable energy sites (e.g., wind farms) where chemicals are produced for the market. This study aims to design the supply chain, consisting of locations and scales of fermenters and reactors, to maximize the expected profit over a multi-year time horizon.

**Keywords**: Chemicals from biomass, Green electrochemistry, Supply chain network design.