240b Optimal Supply Chain of Light Aromatic Compounds
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The scope of this research is concerned with the supply chain of light aromatic compounds, i.e., benzene, toluene, m-xylene and p-xylene. The proper production scheme of these compounds over multiple time periods can be configured by selecting throughput, operating conditions and technology options for each unit in the chain, by maintaining the desired inventory level for each process material, by purchasing enough raw materials, and by delivering appropriate amounts of products to the customers. A mixed integer nonlinear programming model is developed to synthesize the best SCM policies under the constraints of given supplies and demands. By solving this model, not only the appropriate inventory level of every process material and the optimal throughput and operation mode of each production unit can be determined, but also the purchase opportunities of intermediate oils can be clearly identified.