

Chemical Engineering

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Acetic acid removal from pre-pulping wood extractz

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Pre-pulping extraction is a means of deriving a hemicellulose-rich process stream from the front end of a Kraft pulp mill. When the extraction is carried out using green liquor, pulp quality and quantity can be retained while still releasing hemicelluloses and acetic acid for recovery as bioprocessing feedstock or chemical products. The acetic acid that is present in the wood extraction is inhibitory to microorganisms and can inhibit fermentation. It is also a commodity chemical that may provide retain sufficient value to justify recovery and purification. In this study, a liquid-liquid extraction method is applied to extract acetic acid from a green liquor pre-pulping hardwood extract. The acetic acid removal process takes place as an initial step prior to the fermentation process. An organic solution, such as trioctylphosphine oxide (TOPO) in un-decane, is prepared and mixed with wood extract. Next the extract phase is centrifuged in order to separate the aqueous and organic phases. The aqueous phase is sent on to fermentation while the organic phase is sent on to distillation to separate acetic acid from the organic phase. Finally, the organic solvents are recycled back to the extraction. Results present the extraction and recovery efficiencies. Preliminary comparisons are made with other potential separation technologies.

Biography

Aymn Abdulrahman has completed his PhD from University of Maine, USA. He has worked for 9 months in Arabian Petroleum Supply (APSCO) in Saudi Arabia and then about 2 years in sugar refinery as Shift Manager Trainee. Currently, he is an Assistant Professor and Chairman of Chemical Engineering department at University of Jeddah, Saudi Arabia. He has participated as a Member and a Speaker in the American Institute of Chemical Engineers (AIChE Annual Meeting) in Nashville, Tennessee, USA in the year 2009.

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