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Study of the best *Trichoderma reesei* support for hydrolysis of cellulose

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Bioethanol, one of the outstanding biofuels, is not only a renewable bio-based resource but also interesting to research for improving better properties of the enzyme needed in the hydrolysis process. The purpose of this work is to study how to reuse the *Trichoderma reesei* enzyme used in the hydrolysis step for bioethanol production by immobilization technique using various silica supports, namely, SBA-15, TUD-1 and MCM-48. The amount of the adsorbed enzymes was determined by UV-visible spectrophotometry. Among those studied supports, SBA-15 impressively provided 100% enzymatic adsorption owing to its larger pore diameter of 6.14 nm, which is large enough to accommodate enzyme molecules inside the pore channel. Various parameters, viz. temperature, pH, time and amount of the support for optimizing the immobilized enzyme were investigated. Both supports and the immobilized *T. reesei* on SBA-15 support were characterized by N₂ adsorption-desorption. The amount of monomeric sugar after the hydrolysis process was analyzed by high-performance liquid chromatography (HPLC) to determine the optimal conditions for the hydrolysis process using the immobilized *T. reesei* on the SBA-15 support.

Biography

Kurizara Sayamnikorn was born and raised in Bangkok, Thailand. Obtaining her Bachelor degree from Silpakorn University and Master degree in Polymer Science from the Petroleum and Petrochemical College, Chulalongkorn University. Her thesis research was focused on immobilizing enzyme on various supports for the hydrolysis application. She enjoys fashion, basketball and traveling.

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