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Continuous Ethanol Production Through Fermentation with Glucose and Xylose by Immobilized Yeasts in Two Cascade Fixed Beds

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摘要 Glucose and xylose were used as mixed carbon sources for ethanol production by a cascade immobilized-cell reactor.In the
first fixed-bed reactor, immobilized S.cerevisiae was used to metabolize the glucose anaerobically, and in the second fixed-
bed column, the immobilized Pichia stipitis was applied to metabolize xylose aerobically.The effect of xylose on the glucose
uptake by S. cerevisiae and the effect of ethanol on the xylose metabolization by P.stipitis were studied.A mathematical odel
taking both the substrate and xylose inhibition into consideration was suggested for the description of the two-substrate
fermentation process, and a total effectiveness factor ηs in the model was derived to take into account the mass transfer
resistances of intra-particles and liquid films.Calculated results are in fair agreement with the experimental data.

关键词 ethanol continuous fermentation mixed substrate kinetic model

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Key words ethanol; continuous fermentation; mixed substrate; kinetic model

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