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**Nonionic surfactants enhanced enzymatic hydrolysis of cellulose by
reducing cellulase deactivation caused by shear force and air-liquid
interface**

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Highlights

1. High speed shearing would lead to cellulase deactivation.
2. Nonionic surfactants could reduce shear deactivation of cellulase.
3. The enhancement of nonionic surfactants is notable at high agitation rate.

Abstract

Effects of nonionic surfactants on enzymatic hydrolysis of Avicel at different agitation rates and solid loadings and the mechanism were studied. Nonionic surfactants couldn't improve the enzymatic hydrolysis efficiency at 0 and 100 rpm but could enhance the enzymatic hydrolysis significantly at high agitation rate (200 and 250 rpm). Cellulase was easily deactivated at high agitation rate and the addition of

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