Enzymatic hydrolysis of lignocellulosic biomasses via CFD and experiments

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Publication date
2012/6/6

Journal
Industrial & engineering chemistry research

Volume
51

Issue
22

Pages
7518-7525

Publisher
American Chemical Society

Description
The time evolution of the rheological properties of pretreated Arundo slurries has been estimated, during enzymatic hydrolysis for bioethanol production, by computational fluid dynamics simulations in conjunction with experimental tests on a laboratory scale anchor reactor with different solid concentrations (18.5 and 27.5% w/w) and stirring velocities (50–200 rpm). The simulations were carried out with Fluent 6.2 using the moving reference frame approach and the Herschel–Bulkley rheological model. Great care was taken in the development of the computational grid and in the solution of the numerical issues. The identification of the rheological parameters was successful and the results are consistent with other works published in the literature on similar systems. The next steps of this work will involve the use of these results to design new continuous reactors for enzymatic hydrolysis and their scale up to a pilot …