Environmental Engineering and Management Journal May 2011, Vol.10, No. 5, 711-716
http://omicron.ch.tuiasi.ro/EEMJ/

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STUDY ON THE MIXING EFFICIENCY IN A BASKET BIOREACTOR WITH IMMOBILIZED YEASTS CELLS

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Abstract

The studies on the mixing efficiency of medium with apparent viscosity between 1 and 75 cP in a stirred bioreactor with a fixed basket bed of immobilized cells of *S. cerevisiae* indicated that the presence of basket leads to the significant intensification of medium circulation compared with a conventional stirred bioreactor. The mixing time recorded for the medium circulation in the outer region of basket was for about 7 to 72 times lower than that previously reached in the absence of the cylindrical bed of immobilized cells. The optimum position of the Rushton turbine on the stirrer shaft was found to be inside the cylindrical bed, at the superior extremity of the basket. This position offers the possibility to reach the lowest mixing time values and the most important attenuation of the negative influence of the apparent viscosity increase on the medium hydrodynamics. The mathematical correlation describing the influence of the main factors on the mixing time was established for the optimum position of turbine, and offers a good concordance with the experimental data (the average deviation was of ±6.85%).

Key words: basket bioreactor, ethanol, immobilized cells, mixing time, *Saccharomyces cerevisiae*

Received: January, 2011; Revised final: May, 2011; Accepted: May, 2011

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