



MODELLING AND SIMULATION OF THREE PHASE BIOREACTORS APPLIED TO THE DEPOLLUTION OF GASEOUS STREAMS CONTAINING VOLATILE ORGANIC COMPOUNDS – A COMPARISON BETWEEN FIXED BED AND FLUIDIZED BED BIOREACTORS

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Abstract

The paper describes and compares two types of bioreactors - fixed and fluidized beds applied in the waste gases treatment. The main aspects of chemical engineering applied in the environmental protection are summarized, followed by the modelling and simulation of the biological treatment process of gaseous streams containing dichloromethane into bioreactors that contains the microorganisms attached as biofilm on fixed or fluidized solid particles. The simulation is based on analytical models from literature. The results demonstrate that it is possible to achieve the synthesis of such biodegradation systems and to establish the optimal working conditions based on preliminary computer simulation results in order to ensure the best technical and economical pathway.

Keywords: bioreactor, dichloromethane (DCM), three-phase, fluidized bed, fixed bed, modelling, system simulation

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