Pichamat Tantake 2006: Analysis of the Validity of the Dirac Delta Function in TAP Models Via Numerical Simulation. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering.
Thesis Advisor: Associate Professor Phungphai Phanwadee, D.Sc. 105 pages.
ISBN 974-16-1944-8

Regression analysis and moment analysis for estimation of transport and kinetic parameters in TAP experiments are compared using different types of responses including exit flow rate curves and normalized responses. The experimental responses were obtained from simulation under a non-ideal inlet flow condition. The parameter estimation was performed using the ideal model. The quantities used in the comparison are the percentage differences between the estimated and the real parameters including the diffusivity and the irreversible first order reaction rate constant. These quantities also indicate the validity of the ideal inlet condition. For typical domains in TAP experiments, the diffusivity percentage difference obtained from the regression analysis was found to be about two times larger than that from the moment analyses. The percentage difference of the reaction rate constant can be large and depends on the estimation methods, the types of the response, and the gas conversion.

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