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Measurement and Modeling of the Kinetics of Catalyst Decay in Fixed Beds: The Eurokin Survey

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Abstract

Experimental techniques for the practical measurement of catalyst decay are reviewed, and some gaps and needs are suggested for future progress. Catalyst decay kinetics in fixed beds can be modeled according to a hierarchy of techniques, from purely empirical to rigorously fundamental. Empirical modeling is usually preferred for practical industrial purposes. Besides the need to decouple reaction kinetics, decay kinetics, and any influence of pore diffusion, for slowly decaying catalysts, the slow rate of data acquisition is a limiting factor. Hence, there is a need for better equipment design and better procedures for the efficient and informative testing of catalyst decay.