

Use of Intraparticle Mass Transfer Parameters as a Design Tool for Catalyst Pellets

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摘要 A chromatographic method and a dynamic Wicke-Kallenbach method (DMWK) were used to determine the diffusion characteristics of two industrial copper containing catalysts. The first catalyst was used in nitrobenzene hydrogenation to aniline and the second was used in a low temperature water-gas shift reaction. Experimental results show that application of these two methods leads to similar results. Experimental data obtained allow for monitoring changes in the texture of the catalyst grains and intraparticle diffusivity of gaseous reagents at different states of the catalyst activity and use, which can be used as criteria for designing optimal industrial catalyst pellets.

关键词: [effective diffusion coefficient](#) [tortuosity](#) [copper catalyst](#) [pellet design](#)

Abstract: A chromatographic method and a dynamic Wicke-Kallenbach method (DMWK) were used to determine the diffusion characteristics of two industrial copper containing catalysts. The first catalyst was used in nitrobenzene hydrogenation to aniline and the second was used in a low temperature water-gas shift reaction. Experimental results show that application of these two methods leads to similar results. Experimental data obtained allow for monitoring changes in the texture of the catalyst grains and intraparticle diffusivity of gaseous reagents at different states of the catalyst activity and use, which can be used as criteria for designing optimal industrial catalyst pellets.

Keywords: [effective diffusion coefficient](#), [tortuosity](#), [copper catalyst](#), [pellet design](#)

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