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RESEARCH PAPERS

富镧稀土镍-苯浆液体系中液相苯加氢反应动力学研究

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摘要 The kinetics of liquid-phase hydrogenation of benzene in misch metal nickel-five (MlNi5) and benzene slurry system was studied by investigating the influences of the reaction temperature, pressure, alloy concentration and stirring speed on the mass transfer-reaction processes inside the slurry. The results show that the whole process is controlled by the reaction at the surface of the catalyst. The mass transfer resistance at gas-liquid interface and that from the bulk liquid phase to the surface of the catalyst particles are negligible. The apparent reaction rate is zero order for benzene concentration and first order for hydrogen concentration in the liquid phase. The kinetic model obtained fits the experimental data very well. The apparent activation energy of the hydrogen absorption reaction of MlNi5-C6H6 slurry system is 42.16 kJ.mol-1.

关键词 hydrogen storage slurry hydrogen storage alloy aromatics hydrogen absorption

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Kinetics of Liquid-Phase Hydrogenation of Benzene in a Metal Hydride Slurry System Formed by MlNi5 and Benzene

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Key words hydrogen storage slurry; hydrogen storage alloy; aromatics; hydrogen absorption

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