

催化、动力学与反应器

可视化方法研究合成硫醚反应动力学

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摘要 采用光电显微技术和数字图像跟踪处理技术, 实现了液-液界面亚微观环境的可视化。在微型反应器中研究了兰索拉唑中间体硫醚(2-[3-甲基-4-(2, 2, 2-三氟乙氧基)-2-吡啶基]-硫醚-1*H*-苯并咪唑)的界面合成反应。用数字图像灰度方法建立了浓度-灰度标准曲线, 得到了硫醚界面合成反应动力学曲线和反应速率方程, 计算出了咪唑钠和溴代吡啶由主体相到达界面相的总平均传质阻力。

关键词

[可视化](#) [合成硫醚](#) [浓度-灰度标准曲线](#) [反应动力学](#) [液液相界面](#)

分类号

Reaction kinetics of synthesis of thioether by visualization technique

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Abstract

A novel technique combining photoelectronic microscopy and computer imaging tracing was used to investigate the synthesis of thioether(2-[3-methyl-4-(2,2,2-trifluoro-ethoxy)-pyridine-2-(methylsulfanyl)]-1*H*-benzimidazole), which is an intermediate for lansoprazole. Visualization in sub-microcosmic surroundings was realized to study interfacial phenomenon. The reaction kinetics study by a visualization technique was carried out in a mini-reactor, and the concentration-gray scale standard curves for thioether were obtained by analyzing the gray scales of digital images. Based on the concentration-gray scale standard curves, the reactant concentrations at different times were calculated, and the reaction kinetics curve and reaction rate equation were obtained. Also the total mass-transfer resistance from bulk phase to interface of sodium imidazole and bromopyridine was obtained. Liquid-liquid interface of synthesizing thioether was observed and its mass transfer mechanism was discussed.

Key words

[visualization](#) [thioether synthesis](#) [concentration-gray scale standard curve](#) [reaction kinetics](#) [liquid-liquid interface](#)

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