

化学

乙醛肟与亚硝酸反应的动力学研究

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摘要 采用分光光度法研究乙醛肟与亚硝酸在高氯酸和硝酸介质中的反应动力学, 得到了反应动力学方程。实验结果表明, 20 °C时, 乙醛肟与亚硝酸的反应速率常数为 $(921.6 \pm 7.4) (\text{mol/L})^{-1.5} \cdot \text{min}^{-1}$, 乙醛肟与亚硝酸能快速发生反应; 提高乙醛肟、亚硝酸浓度和温度, 乙醛肟与亚硝酸的反应速率随之加快。在乏燃料后处理中, 当以乙醛肟作为U、Pu分离的还原剂时, 其本身又可作为亚硝酸清扫剂, 此时, 无需另加支持还原剂。

关键词 [乙醛肟](#) [亚硝酸](#) [分光光度法](#) [反应动力学](#)

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Kinetics of Reaction of Acetaldoxime and HNO_2

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Abstract By studying spectrophotometrically the reaction kinetics of acetaldoxime and HNO_2 in both HNO_3 and HClO_4 medium, the corresponding equation of the reaction kinetics was obtained. It is found that the rate constant of the reaction of acetaldoxime and HNO_2 is $(921.6 \pm 7.4) (\text{mol/L})^{-1.5} \cdot \text{min}^{-1}$ when the temperatures is taken to be 20 °C, correspondingly. It indicates that a cetaldoxime is able to react with HNO_2 very quickly. Also, it is demonstrated that the velocity of the reaction speeds up with the increase of the acetaldoxime concentration, the HNO_2 concentration, and the temperature. Therefore, acetaldoxime can be used as the reductant for the separation of U and Pu in the Purex process of spent fuel without adding any other stabiliser, since it can scavenge HNO_2 completely by itself.

Key words [acetaldoxime](#); [\$\text{HNO}_2\$](#) ; [spectrophotometry](#) [reaction](#) [kinetics](#)

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