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六氟化铀与卤化氢气体的反应动力学研究

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摘要 研究了UF6+HX(HX=HCl, HBr和HI)反应动力学, 结果显示,UF6+HX反应速率随着HCl-HBr-HI次序增加, 在室温下它们的反应速率常数分别为2.32×10^-^6, 6.43×10^-^4, 5.89×10^-^3s^-^1.Pa^-^1。UF6+HCl和UF6+HBr反应的表观活化能分别为11.29和4.18kj/mol。以上反应速率依次增加, 表出活化能依次减小的趋向与HX的键能以HCl-HBr-HI次序减小相符合。

关键词 反应动力学 活化能 反应速度常数 氟化铀 卤化氢

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Study on the reaction kinetics of uranium hexafluoride with gaseous hydrogen halides

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Abstract The reaction linetics of UF6+HX(HX=HCl, HBr and HI) has been studied. It was found that the reaction rates of UF6+HX increased with the sequence from HCl to HI, for example, the rate constants were 2.32×10^-^6, 6.43×10^-^4 and 5.89×10^-^3s^-^1.Pa^-^1 at room temperature, respectively. The apparent activation energies of the reactions of UF6+HCl and UF6+HBr were 11.29 and 4.18kj/mol, respectively. The increase order of the rates and the decrease order of the apparent activation energies are consistent with the decrease in the bond energy of HX with the sequence from HCl to HI.

Key words REACTION KINETICS ACTIVATION ENERGY REACTION RATE CONSTANT URANIUM FLUORIDE HALOGEN HYDRIDE

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