

Full Papers

超声波辅助Ru-B非晶态合金常压催化肉桂醛加氢制备肉桂醇

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摘要 采用KBH₄化学还原法制备了超细Ru-B非晶态合金催化剂。Ru-

B催化剂在肉桂醇液相常压加氢中显示出较高的肉桂醇选择性。在加氢过程中使用超声辐射能大大提高反应速率而肉桂醇的选择性几乎保持不变。加氢速率随着超声频率或超声时间的增加而增加。通过XRD、XPS、TEM、BET和ICP等各种表征手段, 简要研究了超声辐射对Ru-B催化剂结构和电子特征的影响。同时, 还讨论了超声对肉桂醛选择性加氢制肉桂醇催化性能的促进作用。

关键词 [Ru-B非晶态合金](#), [超声辐射](#), [肉桂醛](#), [肉桂醇](#), [催化加氢](#)

分类号

Ultrasound-assisted Cinnamaldehyde Hydrogenation to Cinnamyl Alcohol at Atmospheric Pressure over Ru-B Amorphous Catalyst

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Abstract The ultrafine Ru-B amorphous alloy catalyst was prepared by chemical reduction with KBH₄. During liquid phase hydrogenation of cinnamaldehyde at atmospheric pressure, the Ru-B catalyst prepared exhibited excellent selectivity to cinnamyl alcohol. When the hydrogenation was performed with ultrasonic irradiation, the reaction rate could be greatly enhanced while the selectivity to cinnamyl alcohol remained almost unchanged. The hydrogenation rate was increased with the increase of either the ultrasonic frequency or the irradiation time. According to various characterizations, such as XRD, XPS, TEM, BET and ICP, the effect of ultrasonic irradiation on the structural and electronic characteristics of Ru-B catalyst was studied briefly. Meanwhile, the promotion effect of ultrasonication on the catalytic performance was also discussed based on the selective hydrogenation of cinnamaldehyde to cinnamyl alcohol.

Key words [Ru-B amorphous alloy](#), [ultrasound irradiation](#), [cinnamaldehyde](#), [cinnamyl alcohol](#), [catalytic hydrogenation](#)

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