

超细非晶态NiWB合金的制备及葡萄糖加氢性能的研究

乔明华,谢颂海,戴维林,邓景发

复旦大学化学系,上海(200433)

收稿日期 修回日期 网络版发布日期 接受日期

摘要 通过改变溶液中的Na~2WO~4浓度以化学还原法制备了一系列超细非晶态NiWB合金,并用于葡萄糖高压液相加氢制取山梨醇。研究表明NiWB合金的催化活性均远高于RaneyNi。同时XPS揭示了钨的加入可以调变元素态硼的给电子能力,进而影响硼对羰基的活化和镍对氢的解离吸附能力。在活性最佳的NiWB-3合金上的基本动力学研究表明,葡萄糖加氢反应对氢压为一级,对葡萄糖浓度为零级,在373~403K范围内的反应活化能为54.7kJ·mol⁻¹。

关键词 [镍合金](#) [钨合金](#) [硼合金](#) [葡萄糖](#) [加氢](#) [山梨糖醇](#)

分类号 [TG146](#)

preparation of ultrafine amorphous NiWB alloys and their activities in glucose hydrogenation to sorbitol

Qiao Minghua,Xie Songhai,Dai Weilin,Deng Jingfa

Fudan Univ, Dept Chem,Shanghai(200433)

Abstract A series of ultrafine amorphous NiWB alloys were prepared by chemical reduction in aqueous solution with various concentration of Na~2WO~4. It is found that their catalytic activities are strikingly higher than that of Raney Ni catalyst in liquid phase glucose hydrogenation to sorbitol. XPS analysis revealed that tungsten can tailor the electron donation ability of elemental boron, which affects carbonyl group activation for glucose by boron as well as the dissociative adsorption of hydrogen on nickel. Fundamental kinetic study on the optimal NiWB-3 alloy showed that hydrogenation is first order to hydrogen and zero order to glucose. The activation energy in the temperature range of 373~403K is estimated to be 54.7kJ·mol⁻¹.

Key words [NICKEL ALLOYS](#) [TUNGSTEN ALLOYS](#) [BORON ALLOY](#) [GLUCOSE HYDROGENATION](#) [SORBITOL](#)

DOI:

通讯作者

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(OKB\)](#)

▶ [\[HTML全文\]\(OKB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“镍合金”的 相关文章](#)

▶ 本文作者相关文章

· [乔明华](#)

· [谢颂海](#)

· [戴维林](#)

· [邓景发](#)