

氢化大豆卵磷脂Pd/C催化剂制备工艺优化 Preparation Process Optimization of Pd/C Catalysts for Hydrogenation Soy Lecithin

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关键词: 大豆卵磷脂 氢化 Pd/C催化剂 制备

摘要: 应用浸渍法制备Pd/C催化剂,以大豆卵磷脂氢化反应前后碘值的变化作为指标,考察了制备条件对Pd/C活性的影响,并借助透射电镜的表征手段分析催化剂的形貌变化。结果表明,制备大豆卵磷脂氢化Pd/C催化剂的优化工艺为:原料炭经10%硝酸预处理后,在40℃的3.5 mg/mL H₂PdCl₄溶液中浸渍2 h,在30%甲醛、还原温度80℃、pH值1~2的条件下还原5 h,并经80℃真空干燥获得成品。催化剂Pd粒径为7.8 nm,制备的催化剂可使大豆卵磷脂氢化后碘值下降到18.6 gI/(100 g)。在制备过程中前浸体溶液pH值对催化剂活性的影响很大。Pd粒径较小时,催化剂活性更强。Pd/C catalysts was prepared by impregnation and the variation of soy lecithin's iodine value after hydrogenation was studied. The characterization of catalysts was analyzed by using microspectroscopy (TEM). The results showed the optimum preparation condition was as follows: when carbon was pretreated with 10% HNO₃ solution, impregnated 2 h in 3.5 mg/mL H₂PdCl₄ solution at 40℃, then reduced 5 h in 30% formaldehyde solution at 80℃, solution pH value 1~2, Pd/C catalysts were dried in 80℃ vacuum condition. The Pd particles size was 7.8 nm. After Pd/C catalysts hydrogenated, soy lecithin's iodine was down to 18.6 gI/(100 g). The results showed solution pH value effected catalysts activity largely. The smaller Pd particles size was, the stronger catalyst activity was.

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