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非晶态合金作催化材料的研究**IV.** 超细非晶态**Ni-B**催化剂的制备及催化性能研究

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摘要 采用化学还原法制备了非晶态Ni-B超细粒子催化剂, 所含两种粒子的粒径分别为5~20nm和150nm左右。对环戊二烯常压液相加氢反应的活性测试结果表明, 该催化剂具有很高的活性和选择性, 并且在加氢反应中具有替代Raney Ni和Pd/C催化剂的工业应用潜力。动力学测量表明, 在该催化剂上, 环戊二烯选择加氢生成环戊烯的反应为零级, 环戊烯生成环戊烷的反应为近似一级。

关键词 催化 催化剂 镍 环戊二烯 硼 超细粒子 非晶态合金

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Studies of amorphous metals as catalytic material IV. perparation of amorphous Ni-B ultrafine particles and its catalytic properties

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Abstract The amorphous Ni-B ultrafine particles were prepared by using KBH~4 to reduce Ni^2+ ion in ethanol solution, and two kinds of particles with the average diameter around 150nm and 5~25nm respectively were observed. The hydrogenation of 1, 3-cyclopentadiene were also investigated by using these particles, and a higher hydrogenation activity and selectivity of cyclopentene were observed. As a comparation, Raney Ni and Pd/C catalysts were also used to catalyze the same reaction. The results show thatamorphous Ni-B ultrafine particles display to have a higher catalytic hydrogenation ability and can be used in the reaction of hydrogenation instead of Raney Ni and Pd/C catalysts.

Key words CATALYSIS CATALYST NICKEL CYCLOPENTADIENE BORON MICRO-SIZE PARTICLES AMORPHOUS ALLOY

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