

磷钨杂多酸及其铯盐上的常温正戊烷异构化反应

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摘要 制备了一系列用于正戊烷异构化的磷钨杂多酸及其铯盐催化剂,并对它们进行了详细的物性表征。实验结果表明,Cs含量对催化剂的比表面、孔结构、热稳定性和表面酸量有显著的影响。考察了所制备的催化剂上常温下正戊烷异构化反应的活性和选择性。利用催化剂表征结果讨论了活化温度和Cs含量等因素对催化性能的影响。磷钨杂多酸及其铯酸盐属固体超强酸。根据35℃时正戊烷异构化反应速率常数估测H-3PW-1-2O-4-0和Cs-2-,~2-5H-0-,~7-5PW-1-2O-4-0的酸强度H-0约在-13~-12.4之间。

关键词 [盐](#) [戊烷](#) [酸式盐](#) [铯化合物](#) [异构化反应](#) [超强酸](#) [固体酸催化剂](#) [化合物表征](#) [催化性能](#) [钨磷杂多酸](#) [国家攀登计划资助基金](#)

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Pentane isomerization at ambient temperature on H-3PW-1-2O-4-0 and its cesium salts

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Abstract A series of 12-tungstophosphoric heteropolyacid and its cesium salts as n-pentane isomerization catalysts were prepared and characterized with various techniques. The BET surface area, pore structure, thermal stability and surface acidity of the catalysts are influenced strikingly by the amount of Cs in the heteropolyacid salts. The catalytic activity and selectivity of the catalysts for n-pentane isomerization at ambient temperature were investigated. The effects of activation temperature and Cs content on catalytic behavior of the catalysts were discussed in relation to the characterization results. 12- tungstophosphoric heteropolyacid and its acidic cesium salts are solid superacids. The acid strengths of H-3PW-1-2O-4-0 and Cs-2-,~2-5H-0-,~7-5PW-1-2O-4-0 are estimated to be in the range of H-0=-13~-12.4 by measuring the rate constants of n-pentane isomerization reaction at 35℃.

Key words [SALT](#) [PENTANE](#) [ACIDIC SALT](#) [CESIUM COMPOUNDS](#) [ISOMERIZATION REACTION](#) [SUPERACID](#) [SOLID ACID CATALYST](#) [COMPOUND CHARACTERIZATION](#) [CATALYTIC BEHAVIOUR](#)

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