

杂多酸(盐)及单缺位磷钨杂多化合物在醇类氧化反应中的催化活性

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摘要 在相转移条件下,研究了杂多化合物在苯醇,环己醇氧化反应中的催化活性.

六种Keggin结构杂多酸的催化活性按GeMo~12(H~4GeMo~12O~40的简写,

其余类推,PW~12,PMo~12,SiMo~12,GeW~12,SiW~12顺序下降,

杂多酸中的质子可分别被其它阳离子逐渐取代而达到酸性修饰. H~3PW~12O~40随着其质子逐步被Na⁺取代,

酸性下降,催化活性大大提高;杂多酸(盐)的催化活性随体系pH值的改变将发生奇妙剧烈的变化;

单缺位杂多化合物显示出较饱和和杂多酸(盐)更高催化活性.溶剂对催化活性有明显影响.

关键词 [杂多酸](#) [磷酸盐](#) [磷酸盐](#) [相转移催化](#) [环己醇](#) [钨酸盐](#) [催化活性](#) [氧化反应](#) [苯醇](#)

[溴化十六烷基三甲铵](#) [杂多化合物](#)

分类号 [0643](#)

The catalytic activity of heteropoly acids(salts) and mono-lacunary heteropoly-tungstophosphoric compound in the oxidation of alcohols

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Abstract The catalytic activity of heteropoly compounds in the oxidation of benzyl alcohol and cyclohexanol under phase transfer conditions has been studied. The catalytic activity of six kinds of heteropoly acids with Keggin structure will drop by the order of GeMo₁₂(H₄GeMo₁₂O₄₀), PW₁₂, PMo₁₂, SiMo₁₂, GeW₁₂ and SiW₁₂. When the three protons of H₃PW₁₂O₄₀ were replaced by Na⁺ step by step, the catalytic activity will raise gradually with the drop of acidity. The addition of base and trace amount of sulfuric acid to the reaction system resulted in an increase of catalytic activity. Catalytic activity of mono-lacunary heteropoly compounds is higher than that of the primary heteropoly acids (or salts). The catalytic oxidation system of HPA (heteropoly acids)-H₂O₂-PTC is very active in the oxidation of benzyl alcohol and cyclohexanol, but it has little activity in the oxidation of inactive compounds such as PrOH, Me₂CHOH, BuOH, and n-hexanol. Solvent has great effect on reaction, when polar compounds such as water were used as solvent, the catalytic activity is better than that when non-polar compounds were used as solvent.

Key words [HETEROPOLYACID](#) [PHOSPHATE](#) [PHOSPHATE](#) [PHASE TRANSFER CATALYSIS](#) [CYCLOHEXANOL](#) [TUNGSTATE](#) [CATALYTIC ACTIVITY](#) [OXIDATION REACTION](#) [BENZALCOHOL](#)

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