

研究简报

## 胶溶法制备改性氧化铝的结构及织构特点

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摘要 对胶溶法制备的镧和聚乙二醇(PEG)改性的氧化铝载体进行了深入研究.

关键词 [氧化铝](#) [载体](#) [胶溶](#) [结构](#) [织构](#)

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## Characteristics of Structure and Texture of Modified Alumina Prepared by Peptizing Method

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**Abstract** Alumina prepared by peptizing method with a high specific surface area, moderate pore structure and pore size distribution was studied. Furthermore, the effects of additives La and PEG on thermal stability, particle size, structure and texture of alumina were investigated. The results of characterization of BET and XRD show that the addition of La greatly inhibits the loss of specific surface area and  $\alpha$  phase transformation of alumina under the hydrothermal and high temperature conditions. At the same time, PEG as an additive can apparently increase pore volume and pore diameter of alumina. The more the La and PEG content is, the larger the surface area, pore volume and average diameter of alumina are. However, when the quantity ratio of  $\text{La}_2\text{O}_3$  to  $\text{Al}_2\text{O}_3$  or PEG to  $\text{Al}_2\text{O}_3$  is excessive, the negative action of La and PEG are stronger. When the quantity ratio of  $\text{La}_2\text{O}_3/\text{Al}_2\text{O}_3$  is 2.5%—3.0%, thermal stability of  $\gamma\text{-Al}_2\text{O}_3$  is the best and specific surface area of alumina is more than  $140\text{ m}^2/\text{g}$  after hydro thermally being aged at  $1000\text{ }^\circ\text{C}$  for 5 h. Though PEG plays a good role on making pore and aggregation when the value of quantity ratio of  $\text{PEG}/\text{Al}_2\text{O}_3$  is 80%, the thermal stability of alumina is worse and specific surface area is only  $136.4\text{ m}^2/\text{g}$ , pore volume is  $0.41\text{ mL/g}$  and pore diameter is  $9.38\text{ nm}$  under the same aging condition. Fortunately, after hydro thermally being aged at  $1000\text{ }^\circ\text{C}$  for 5 h, the alumina containing 2.5% $\text{La}_2\text{O}_3$  and 80%PEG of quantity of alumina has the best thermal stabilization and the largest specific surface area, pore volume and pore diameter that are  $156.2\text{ m}^2/\text{g}$ ,  $0.57\text{ mL/g}$  and  $11\text{ nm}$ , respectively.

**Key words** [Alumina](#) [Support](#) [Peptization](#) [Structure](#) [Texture](#)

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