

纳米沸石胶体化学性质的研究

王兴东,王亚军,杨武利,董安钢,任楠,谢在库,唐颐

复旦大学;中国石油化工总公司上海石油化工研究院

收稿日期 修回日期 网络版发布日期 接受日期

摘要 主要考察了MFI和BEA结构纳米沸石的胶体化学性质,对与纳米组装过程直接相关的纳米沸石的电动性质(体现为 ζ 电势)和自聚集性质进行了研究.考察了pH值、离子强度和硅铝比对沸石 ζ 电势的影响.发现纳米沸石表的变化取决于其骨架结构和组成,而电解质浓度的增大可使沸石胶粒的 ζ 电势减小;州增大可使 ζ 电势向负电性增方向变化.较高的 ζ 电势是维持沸石胶液稳定的基本条件;而过小的 ζ 电势则将导致纳米沸石的聚集或沉降,在毛细作用下纳米沸石可以自组装成沸石纤维,沸石的粒径是影响该组装的关键因素,沸石粒径越小,越容易组装成致密透明的沸石纤维.

关键词 [纳米相材料](#) [沸石](#) [胶体](#) [电势](#) [电解质](#)

分类号 [0648](#)

Investigation of the Colloidal Properties of Nanozeolites

Wang Xingdong, Wang Yajun, Yang Wuli, Dong Angang, Ren Nan, Xie Zaiku, Tang Yi

Department of Chemistry & Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Fudan University; Department of Macromolecular Science & Key Laboratory of Molecular Engineering of Polymers, Fudan University; Shanghai Research Institute of Petrochemical Technology, SINOPEC

Abstract In this paper, the colloidal properties of nanosized zeolites with MFI and BEA topology structure were investigated. It is found that ζ potential of nanosized zeolites varied with the change of zeolite structures and composition. The influences of salt concentration and pH value on the ζ potential of the nanosized zeolites have been studied. With the increase of the salt concentration, the ζ potential gradually decreased and even possessed opposite charges. The effects of ζ potential on the colloidal aggregation and stability are also detected. A certain ζ potential is necessary to stabilize the zeolite colloid, while too low ζ potential may bring on aggregation of the colloid. At suitable temperature, nanozeolite can be self-assembled by capillary force to form transparent self-standing fibers. The crystal size significantly influences the character of the products. The zeolites with smaller crystal size are rather apt to form long, dense and transparent zeolite fibers.

Key words [NANOPHASE MATERIALS](#) [ZEOLITE](#) [COLLOID](#) [ELECTRIC POTENTIAL](#) [ELECTROLYTE](#)

DOI:

通讯作者

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(0KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“纳米相材料”的相关文章](#)

▶ 本文作者相关文章

- [王兴东](#)
- [王亚军](#)
- [杨武利](#)
- [董安钢](#)
- [任楠](#)
- [谢在库](#)
- [唐颐](#)