

催化剂

## 海泡石的酸改性及其作为FCC催化剂基质的初步研究

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**摘要** 利用三种强酸对海泡石进行改性,研究了酸浓度、反应温度、反应时间对海泡石性能的影响。采用X射线衍射(XRD)、红外光谱(FIR)和热重分析(TGA)对改性海泡石进行表征,在此基础上,考察了改性海泡石作为FCC催化剂基质对其催化性能的影响。实验结果表明,以三种强酸改性海泡石,盐酸最为适宜;随着酸浓度的增大,反应温度的升高,反应时间的延长,改性海泡石的比表面、孔体积和脱镁率提高;适合FCC催化剂基质的最佳改性条件为:盐酸改性,其浓度为1 mol/L,反应温度80 ℃,反应时间2.5 h,在此条件下,海泡石的脱镁率约为27%;以改性海泡石作为FCC催化剂基质,有效的提高催化剂的比表面、孔体积以及增加了催化剂中孔的孔体积;同时海泡石带入适量的氧化镁,可以增强催化剂的抗重金属性能。

**关键词** [海泡石](#) [酸处理](#) [催化剂](#) [基质](#)

分类号

## STUDY ON THE ACID MODIFIED SEPIOLITE AND ITS APPLICATION IN FCC CATALYST MATRIX

### Abstract

Modification of sepiolite by hydrochloric acid, sulfuric acid and nitric acid was carried out. The results showed that hydrochloric acid was suitable for the modification of sepiolite on the whole. The effects of acid concentration, treating temperature and treating time on the Mg removal rate of sepiolite were studied and the modified sepiolite samples were characterized by XRD, FT-IR and TGA. The specific surface area, pore volume and Mg removal rate of sepiolite samples were increased with the increase of acid concentration, treating time and treating temperature. Under the optimum conditions of using 1 mol/L HCl acid, treating at 80 ℃ for 2.5 h, the Mg removal rate of sepiolite was about 27%. The modified sepiolite sample was used as main matrix component in the preparation of FCC catalyst samples and the catalysts properties were compared. The specific surface area, pore volume and mesopore volume of the catalysts having acid modified sepiolite were larger as compared with catalyst having kaoline matrix. Besides, said catalyst was more metal tolerance due to the incorporation of MgO from the modified sepiolite.

**Key words** [sepiolite](#) [acid treating](#) [catalyst](#) [matrix](#)

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