

## 柠檬酸对USY分子筛的化学改性研究

刘欣梅, 阎子峰

石油大学重质油加工国家重点实验室

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**摘要** 在非缓冲体系下用柠檬酸对USY分子筛进行分子结构修饰, 详细考察了各反应因素对分子筛改性效果的影响; 并且用XRD, DTA, DTG, FT-IR, N<sub>2</sub>静态容量吸附法等物理手段对改性分子筛样品的结构及性能进行了表征, 用MAT法评价了其催化裂化反应性能和对低碳烯烃的选择性能。发现改性后分子筛硅铝比、结晶度和热稳定性显著提高, 晶胞常数相应减小; 具有更加发达的孔结构, 尤其二次孔含量明显增多; 对低碳烯烃有较高的选择性和收率, 酸性质取得了与文献一致的结论。

**关键词** [柠檬酸](#) [分子筛](#) [改性](#) [X射线衍射分析](#) [差热分析](#) [付里叶变换](#) [红外分光光度法](#)

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## Modification of USY zeolites with citric acid

Liu Xinmei, Yan Zifeng

**Abstract** Hydrothermally ultrastabilized USY zeolites were further modified with citric acid in unbuffered systems. The crystal structure, surface area and pore distribution, acid properties and stability in catalytic cracking of modified samples were determined by XRD, N<sub>2</sub>-adsorption, FT-IR, DTA techniques respectively. The micro-activity performance of the modified samples was evaluated on a standard MAT apparatus. The results show that the Si/Al ratio, crystallinity, lattice constant, and particle size of the modified samples are all significantly improved. The pore system is developed, moreover, the mesopores of the modified zeolites are much greater than those of the parent zeolites. The number of acidic sites and the acid strength are consistent with those reported in the literature. The present work also shows that modified zeolites are promising deep cracking catalyst for producing lighter olefins (C<sub>3</sub>~C<sub>6</sub> hydrocarbons) with good yield and selectivity.

**Key words** [CITRIC ACID](#) [MOLECULAR SIEVE](#) [MODIFICATION](#) [X-RAY DIFFRACTION ANALYSIS](#) [DIFFERENTIAL THERMAL ANALYSIS](#) [FOURIER TRANSFORM](#) [INFRARED SPECTROPHOTOMETRY](#)

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