

H₂O/NaY吸附体系的热化学研究

周立幸,陈淑霞,郑禄彬

中国科学院大连化学物理研究所

收稿日期 修回日期 网络版发布日期 接受日期

摘要 用精密自动绝热量热计测定了在220-320K范围内,不同含水量的H₂O/NaY吸附体系的热容.结果表明,在这些吸附体系的C_p-T曲线上均没有水的固-液相变峰.这说明即使在饱和吸附的情况下,

水分子仍以单分子层的形态存在于NaY表面上,它们没有形成聚集态.此外,

还测定了往饱和吸附的H₂O/NaY中再加入不同量水后所组成的H₂O/NaY体系的热容.在这些C_p-T曲线上都出现了明显的相变峰.所加之水一旦脱出,则相变峰又消失.

这些水存在于分子筛颗粒之间只与外表面接触,但仍受分子筛表面的影响.所以它们的熔化热、熔化温度均比正常水的

关键词 [吸附](#) [分子筛](#) [表面化学](#) [比热](#) [热化学](#) [超分子结构](#)

分类号 [0642](#) [0647](#)

Thermochemical study on H₂O/NaY-Zeolite adsorption system

ZHOU LIXING, CHEN SHUXIA, ZHENG LUBIN

Abstract An automatic adiabatic colorimeter was used to measure the heat capacity at 220--320 K for the H₂O/NaY zeolite adsorption system with various amts. of adsorbed water. The results obtained from CP- T measurements show that there is no peak for the solid-liq. phase transition of adsorbed water. This means that no aggregate state of water is formed on the surface under these conditions and no solid-liq. phase transition can occur. Heat capacity measurements for H₂O/NaY zeolite systems were made on samples prepared by mixing mech. the saturated H₂O/NaY adsorption system with fixed amts. of water. There are clear peaks on the CP-T curves. If the water mixed in the saturated adsorption system is evacuated at once, the peak for the phase transition on the CP-T curves disappears. These water mols. bind to the external surface of the NaY particles. Interaction of water mols. and zeolite lowers surface of the heat, temperature, and entropy of fusion for these adsorbed H₂O mols. compared to bulk water. Water adsorbed on the solid surface differs from normal bulk water.

Key words [ADSORPTION](#) [MOLECULAR SIEVE](#) [SURFACE CHEMISTRY](#) [SPECIFIC HEAT](#) [THERMOCHEMISTRY](#) [SUPERMOLECULAR STRUCTURE](#)

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“吸附”的 相关文章](#)

▶ 本文作者相关文章

- [周立幸](#)
- [陈淑霞](#)
- [郑禄彬](#)