

Thermodynamics of Carbon Monoxide Adsorption on Polycrystalline Titania Studied by Static Adsorption Microcalorimetry

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The adsorption of CO on polycrystalline TiO₂ was investigated by static adsorption microcalorimetry. The initial differential heat of adsorption ($q^{\text{diff},0}$) of CO on polycrystalline titania is 40 kJ/mol, and the standard adsorption entropy (Δs^0) is $-104 \text{ J mol}^{-1} \text{ K}^{-1}$. These results are consistent with those derived from temperature-programmed desorption and FTIR results in the literature. The good reproducibility of the isotherms and the stable q^{diff} indicate that the lattice oxygen and hydroxyl groups on titania surface are basically not reactive to adsorbed CO.