

ENTROPY OF ADSORPTION OF CARBON MONOXIDE ON ENERGETICALLY HETEROGENEOUS SURFACES

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Standard entropies of adsorption (Δs^0) of CO on different materials (Cu catalysts, Au catalysts, ZnO and to TiO₂) are obtained from static adsorption microcalorimetry, adsorption isobars and temperature-programmed desorption, based on the thermodynamics of adsorption on energetically heterogeneous surfaces. Vibrational entropies of the surfaces s_{vib}^σ are normally between the rotational and the standard translational entropy of CO in gas phase, and decrease with increasing adsorption energy, which agrees with the explanation of statistical thermodynamics. Δs^0 reflects both the mobility of adsorbates and the specific adsorbate-adsorbent interaction. Limits for reasonable values of the entropy of adsorption are proposed.

Keywords: *entropy of adsorption, microcalorimetry, temperature-programmed desorption*
