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Low Temperature CO Oxidation Kinetics over Activated Carbon Supported Pt-SnO_x Catalysts

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Abstract: The kinetics of low temperature CO oxidation were studied over sequentially impregnated 1wt%Pt-0.25wt%SnO_x supported on HNO₃-oxidized activated carbon (AC3) using a wide range of CO (1-10 mol%) and O₂ (1-4 mol%) concentrations. Intrinsic kinetic data were obtained in the initial rates region at 383 K in the absence and presence of 5-45 mol% H₂ in the feed. A power-function rate expression with positive dependence on CO (0.96) and negative dependence on oxygen (-0.31) was obtained for the low temperature oxidation of CO. The effect of H₂ on CO oxidation rates was also investigated under similar conditions.

Key Words: Carbon monoxide, oxidation, kinetics, Pt-Sn catalysts, activated carbon supports, PROX

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