heterogeneous catalysis, catalysts

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Reduction of Nitric Oxide by Ammonia at Atmospheric Pressures Over Platinum Polycrystalline Foils as Model Catalysts. — The reduction of NO with NH3 over Pt foils is studied using batch-mode and flow-mode measurements at partial pressures of 70-660 Pa and temp. in the range 373-633 K. The only reaction products are N2, N2O, and H2O. No NO or NH3 decomposition reaction is detected. The NO reduction occurs in the range 548-633 K. In the temp. range 563-603 K, the reaction becomes oscillatory. The activation energies are 102 kJ/mol in the low temp. region and 212 kJ/mol at high temperatures. The two reaction regimes are divided by the range where the reaction oscillates. The product distribution in these regimes also differs: in the low temp. range the N2/N2O ratio is close to 1, while in the high temp. range N2 formation dominates. — (KATONA, T.; GUCZI, L.; SOMORJAI, G. A.; J. Catal. 132 (1991) 2, 440-450; Cent. Adv. Mater., Lawrence Berkeley Lab., Berkeley, CA 94720, USA; EN)