Vanadia-Supported Layered Heterogeneus Catalyst for the Selective Catalytic Oxidation of H_2S

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Developing H_2S emission control technology has received significant attention since legal regulations have become more severe. In this study, a series of vanadia-doped iron-oxide-pillared clays (V/Fe-PILCs) with various amounts of vanadia were prepared and their performance for the selective catalytic oxidation of H_2S was investigated. V/Fe-PILCs were characterized using X-ray diffraction (XRD), surface area and pore volume measurements, chemical analysis, Fourier-transform infrared (FTIR) spectroscopy, X-ray photoelectron spectroscopy (XPS), and temperature-programmed reduction by H_2 (H2-TPR). V/Fe-PILCs showed better catalytic performance than Fe-PILC in the temperature range 220-300 ºC, without any significant SO_2 emissions.