

Abstract

Vapor-phase selective oxidation of benzyl alcohol has been accomplished using cryptomelane-type manganese oxide octahedral molecular sieve (OMS-2) catalysts. A conversion of 92% and a selectivity to benzaldehyde of 99% were achieved using OMS-2. The role played by the oxidant in this system was probed by studying the reaction in the absence of oxidant. The natures of framework transformations occurring during the oxidation reaction were fully studied using temperature-programmed techniques, as well as in situ X-ray diffraction under different atmospheres.