

ELECTRONIC TRANSITIONS OF SCANDIUM MONOXIDE

NA WANG, YUK WAI NG, ALLAN S.C. CHEUNG, *Department of Chemistry, The University of Hong Kong, Hong Kong, Hong Kong.*

The electronic transition spectrum of scandium monoxide (ScO) in the spectral region between 290 and 311 nm has been recorded using laser ablation/reaction free-jet expansion and laser induced fluorescence spectroscopy. The ScO molecule was produced by reacting laser-ablated yttrium atoms with O₂ gas seeded in argon. Twenty transition bands were observed and thirteen of them have been selected for further studied by optical-optical double resonance (OODR) spectroscopy. Higher-lying electronic excited states have been reached via the intermediate B²Σ⁺ state from the ground X²Σ⁺ state. Our analysis indicates that the upper states conform to Hund's case (c) coupling scheme, the sub-states analyzed so far have Ω = 0.5 and 1.5. In addition, for the first time, a quartet state namely ⁴Σ⁺ state has been identified experimentally. Least squares fits of the measured rotational lines yield molecular constants for the newly identified excited states.