

ELECTRONIC BANDS OF ScC IN THE REGION 620 - 720 NM

CHIAO-WEI CHEN, ANTHONY MERER, YEN-CHU HSU, *Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan.*

ScC molecules have been observed by laser-induced fluorescence, following the reaction of laser-ablated scandium metal with acetylene under supersonic jet-cooled conditions. Rotational analyses have been carried out for about 40 bands of Sc¹²C and Sc¹³C in the region 14000 - 16000 cm⁻¹. Two lower states are found, with $\Omega = 3/2$ and $5/2$, indicating that the ground state is $^4\Pi_i$ or $^2\Delta$. As yet we cannot distinguish between these alternatives, but note that the ground state of the isoelectronic YC molecule^a is $^4\Pi_i$. The ground state bond length in ScC is 1.95₅ Å, and the vibrational frequency is 712 cm⁻¹. At least eight electronic transitions occur in the region studied, the majority obeying the selection rule $\Delta\Omega = +1$. Rotational perturbations are widespread, consistent with a high density of excited electronic states.

^aB. Simard, P.A. Hackett and W.J. Balfour, Chem. Phys. Lett., **230**, 103 (1994).