EVALUATION OF TRANSITION PROBABILITY PARAMETERS FOR GAS-PHASE DIATOMIC TIN HALIDES: SnF AND SnCl

P.S. Ramachandran, S.P. Bagare[1], *N. Rajamanickam*

Physics Research Centre, VHNSN College
(*Virudhunagar 626001, India;*
e-mail: nrmanickam@rediffmail.com),
[1]Indian Institute of Astrophysics
(*Bangalore 560034, India; e-mail: bagare@iiap.ernet.in*)

S u m m a r y

The Franck–Condon factors and r-centroids are defined through elementary integrals that involve vibrational wave functions on which they depend in a sensitive manner. The Franck–Condon factors are more useful for the interpretation of astronomical molecular spectra. These factors, which are very closely related to transition probabilities, have been evaluated by the reliable numerical integration procedure for the band systems $A^1\Sigma \rightarrow X^2\Pi_{3/2}$, $A^1\Sigma \rightarrow X^2\Pi_{1/2}$, $B\,^2\Sigma \rightarrow X\,^2\Pi_{1/2}$, and $B^2\Sigma \rightarrow X^2\Pi_{3/2}$ of SnF molecule and $A'^2\Sigma \rightarrow X^2\Pi_{1/2}$ of SnCl molecule using an adequate potential. The Franck–Condon factors, r-centroids, and the available data on wavelengths are given in the respective tables.