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LIF FTS : A POWERFUL TOOL FOR THE SPECTROSCOPY OF TWO HEAVY MOLECULES Rb₂ and Cs₂

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Fluorescence in the Rb₂ and Cs₂ molecules was induced by different lasers: Ar⁺ and Kr⁺ ion lasers and various dye lasers. The fluorescence spectra were recorded at high resolution (5 to 15 10⁻² cm⁻¹) by Fourier transform spectroscopy both in the visible and in the near infrared part of the spectrum.

The fine analysis of the spectra led to the discovery or to the improved knowledge of many excited electronic states. In Cs₂ the following states were characterized (1): A ¹Σ_u⁺ after excitation with the 1.09μm Ar⁺ line, (2) ¹Σ_g⁺, (3) ¹Σ_u⁺, D ¹Σ_u⁺ and E ¹Σ_u⁺. A triplet state, (1) ¹Σ_g⁺, was also put in evidence through a transition issued from a perturbed D ¹Σ_u⁺ level. In Rb₂ five electronic states were detected (2): X ¹Σ_g⁺, B ¹Π_u⁺, (1) ¹Π_g, (2) ¹Σ⁻ and C ¹Π_u. Very high vibrational levels (ν>100) were observed in the X ¹Σ_g⁺ and (1) ¹Π_g states, allowing an accurate determination of the dissociation limits.

References
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