IDENTIFICATION OF TWO NEW ELECTRONIC TRANSITIONS OF TaF USING INTRACAVITY LASER SPECTROSCOPY

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Two new electronic transitions of TaF have been recorded at high resolution using Intracavity Laser Spectrscopy (ILS). The TaF molecules were produced in a current-regulated RF discharge operating with 0.35-0.40 A applied to a Ta-lined Cu hollow cathode. The hollow cathode was located within the resonator cavity of a dye laser, tunable over the 14,500-17,200 cm^{-1}range using DCM and R6G laser dyes. Effective pathlengths from 0.40-2.25 km were utilized with the ILS method. Five bands were observed with red-degraded bandheads near 15,366 cm^{-1}, 16,033 cm^{-1}, 15,630 cm^{-1}, 16,327 cm^{-1}, and 16,930 cm^{-1}that have been respectively assigned as the (0,0) and (0,1) bands of the [16.0] Ω=0-*X* Ω=0 transition of TaF, and (0,1), (0,0), and (1,0) bands of the [16.3] Ω=1-*X* Ω=0 transition of TaF. Rotational assignments for the transitions have been confirmed through combination difference analysis using the reported line positions of Ng *et al.* [*J. Chem. Phys.*, **146**, 094308 (2017)]. These line positions from Ng *et al.* were included in the PGOPHER fit of the newly observed transitions. Results of the analysis will be presented.