THE ULTRA VIOLET SPECTRUM OF TeO_2

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The laser induced fluorescence spectrum of TeO_2 has been recorded between 345 nm and 405, using a high temperature nozzle source. The spectrum shows a considerable improvement in signal-to-noise ratio in comparison with that of Dubois[1] and this has lead to a reassignment of the vibrational structure, including the band origin.
To date, 58 vibrational bands (27 cold and 31 hot) have been reassigned to the $^1B_2 - ^1A_1$ electronic transition of TeO_2. The values of the band origin and the vibrational frequencies for the symmetric stretch (ω_1) and bending (ω_2) modes are given as follows (values are in cm^{-1})

ν_0=25 526 ω_1'=678 ω_2'=220 ω_1''=822 ω_2''=281.

Measurements at high resolution are planned to allow a rotational analysis. Following on from this work, the products of the high temperature reaction $Te + H_2O$ are to be investigated.

Reference

1. I. Dubois, Bulletin de la Societé Royale de Liege, 39e année, n° 1-2, 63 (1970)