

## UNIFIED ANALYSIS OF 14 DATA SETS INTERCONNECTING 12 ELECTRONIC STATES OF As<sub>2</sub>

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The entire emission spectrum of gas phase As<sub>2</sub> below 32,000 cm<sup>-1</sup> excited by microwave or high voltage discharges has been measured using a high resolution Fourier-transform spectrometer (Bruker IFS 120HR) with very sensitive Ge or InSb detectors. Its analysis yielded data on fourteen electronic band systems among the twelve electronic states:  $X\ 0_g^+(^1\Sigma)$ ,  $A'\ 0_u^-(^1\Sigma_u^-)$ ,  $D\ 1_g(^1\Pi_g)$ ,  $a\ 0_u^+(^3\Sigma_u^-)$ ,  $a\ 1_u(^3\Sigma_u^-)$ ,  $c\ 1_u(^3\Sigma_u^+)$ ,  $c\ 0_u^-(^3\Sigma_u^+)$ ,  $e\ 1_u(^3\Delta_u)$ ,  $e\ 2_u(^3\Delta_u)$ ,  $f\ 0_g^+(^3\Pi_g)$ ,  $f\ 0_g^-(^3\Pi_g)$  and  $f\ 1_g(^3\Pi_g)$ . Rather than analyze these band systems in a series of independent two-state analyses, we have performed a comprehensive combined analysis of all data sets simultaneously, using program DSParFit.<sup>b</sup> Differences between the present results and those obtained from independent two-state analyses, will be discussed.

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