High Resolution Emission Spectroscopy of the 
A $^1\Pi - X^1\Sigma^+$ Fourth Positive Band System of CO from Electron Impact

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We report electron-impact induced fluorescence spectra [300 mA full width at half maximum (FWHM)] of CO for 20 and 100 eV impact energies of the spectral region of 1300 to 2050 Å and high resolution spectra (FWHM) of the v'=5 to v''=1 and the v'=3 to v''=0 bands showing that the rotational structure of the band system are modeled accurately. The excitation function of the (0,1) band (1597 Å) was measured from electron impact in the energy range from threshold to 750 eV and placed on an absolute scale from modern calibration standards.

There is a cascade from the higher lying B and C states to the A state and it was found to be a significant percentage of the total excitation cross section, varying from 9% for the v' = 0 to 4% for the v' = 6 at 100 eV.

Fig. 1 High resolution spectrum of the CO (A-X) (3,0) band data (solid) and model (dash) normalized to unity at the R-branch head in the wavelength range of 1447 to 1452 Å. The FWHM is 34 mA.

Acknowledgments

This work was carried out at the Jet Propulsion Laboratory, California Institute of Technology, and was sponsored by the NASA Planetary Atmospheres, and Astrophysics Program Offices. One of us (L.W.B.) is supported by the National Research Council through a Resident Research Associateship at the Jet Propulsion Laboratory.

REFERENCES

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