RECENT PROGRESS IN THE NEAR INFRARED SPECTROSCOPY OF CO_2[a]

CHARLES E. MILLER, MATTHEW A. MONTGOMERY, ROBERT M. ONORATO, AND CHRISTOPHER R. JOHNSTONE, *Department of Chemistry, Haverford College, Haverford, PA 19041-1392 USA*; LINDA R. BROWN, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109-8099 USA*.

We have begun a systematic reinvestigation of the CO_2 spectrum in the 4000 - 9000 cm^{-1} range using the McMath-Pierce Fourier transform spectrometer at the Kitt Peak National Solar Observatory. Fits to more than 100 vibrational bands illustrate that it is possible to obtain rms uncertainties as low as 2×10^{-5} cm^{-1} for strong bands and uncertainties better than 2×10^{-4} for all bands with $S_v^0 > 0.01 \times 10^{-22}$ cm^{-1}/(molecule cm^{-2}). We will also present the first analysis of several $^{18}O^{12}C^{18}O$ and $^{16}O^{13}C^{18}O$ bands. All results will be compared to the data available in the HITRAN database and evaluated relative to the needs of atmospheric remote sensing.

[a]Part of the research described in this paper was carried out by the Jet Propulsion Laboratory,California Institute of Technology, under contract with the National Aeronautics and Space Administration.