NEW ACETYLENE $^{12}C_2H_2$ MEASUREMENTS USING SOLEIL SYNCHROTRON

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The acetylene molecule is important for atmospheric, planetary, and astrophysical applications. This organic molecule, known as a precursor of amino acids, shows numerous vibration-rotation bands in the IR.

A recent study using SOLEIL synchrotron AILES beamline will be presented in the spectral region around 100 cm^{-1}. This work is the continuation of a previous one (D. Jacquemart, L. Gomez, N. Lacome, J.-Y. Mandin, O. Pirali and P. Roy. JQSRT 2010:111;1223-33) for which absolute line intensities of the intense ν_5-ν_4 band have been measured. In the present work a White-type cell has been used to reach an absorption path of 150 meters. With such an absorption path, several weaker bands have been observed and studied in term of absolute line intensities. Analysis of high resolution spectra using the FIR beam AILES of the synchrotron required a special care to the modelization of the apparatus function. The knowledge of the optical weighting of the apparatus function is crucial to measure accurate line parameters especially when using a synchrotron beam.