LABORATORY OBSERVATION OF THE ROTATIONAL SPECTRUM OF A POTENTIAL INTERSTELLAR SUGAR, ERYTHROSE

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The rotational spectrum of erythrose has been recorded in the frequency region 6 – 12 GHz using a chirped-pulse Fourier transform microwave spectrometer (CP-FTMW)[a] combined with a laser ablation (LA) source.[b] The investigation of rotational spectra of erythrose is of astrophysical and biological relevance. However, no gas-phase data were available on erythrose. It is syrup at room temperature and vaporization using conventional methods leads to decomposition. A non convetional laser ablation method has been successfully used to vaporize erythrose and two cyclic forms have been observed using rotational spectroscopy. α-erythrose has been found to have rotational constants are $A = 2586.8998$ (21) MHz, $B = 2353.0837$ (41) MHz and $C = 1773.2378$ (18) MHz and β-erythrose is characterized with rotational constants $A = 3109.2005$ (46) MHz, $B = 1856.1298$ (15) MHz, $C = 1616.5557$ (18) MHz.

[a] G. G. Brown, B. C. Dian, K. O. Douglass, S. M. Geyer, S. T. Shipman, B. H. Pate, *Rev. Sci. Instrum.* **2008**, *79*, 053103.
[b] S. Mata, I. Peña, C. Cabezas, J. C. López, J. L. Alonso, *J. Mol. Spectrosc.* **2012**, *280*, 91.