CHIRPED-PULSE, FTMW SPECTROSCOPY OF THE LACTIC ACID-H_2O SYSTEM

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The previous study of the rotational spectrum of lactic acid in supersonic expansion[a] revealed rather temperamental behaviour of signal intensity suggestive of considerable clusterization. Lactic acid samples contain an appreciable amount of water so that the presence of clusters with water, as well as lactic dimers is suspected. Several, mainly computational, studies of such species have already been published.[b,c,d]

Investigation of the chirped-pulse rotational spectrum of a heated lactic acid (LA) sample diluted in Ne carrier gas allowed unambiguous assignment of the LA-H_2O, LA-$(H_2O)_2$, and LA-$(H_2O)_3$ species. In addition, the rotational spectrum of the AaT conformer of lactic acid has been assigned. This conformer involves an intramolecular hydrogen bond to the hydroxyl of the carboxylic group and it has been estimated to be less stable by ca 10 kJ/mol than the most stable SsC conformer.[e] The evidence for the assignment and a discussion of the derived properties for the new species are presented.

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