MATRIX ASSISTED LASER VAPORIZATION OF BIOMOLECULES FOR FOURIER-TRANSFORM MICROWAVE SPECTROSCOPY

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Laser ablation has previously been coupled with Fourier-transform microwave spectrometers to record rotational spectra of metal oxides, metal halides, carbonyl metal halides, as well as amino acids. We report here on the construction of a new Fourier-transform microwave spectrometer at Kent State University to accommodate a laser vaporization beam source suitable for larger biological molecules. Sample is prepared in thin films of matrix material and coated onto a drum which rotates and translates to expose fresh sample matrix to each pulse. Irradiation with the second harmonic of an Nd: YAG laser vaporizes the sample, which is entrained in He/Ne carrier gas and expanded coaxially into the Fabry-Perot cavity. Sample drums can be easily exchanged when the matrix is consumed.