

## BROADBAND FTMW SPECTROSCOPY OF 2-METHYLIMIDAZOLE AND COMPLEXES WITH WATER AND ARGON

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The rotational spectrum of 2-methylimidazole has been measured using laser ablation chirped-pulse Fourier transform microwave spectroscopy from 2-18.5 GHz. 2-methylimidazole was laser vaporised then entrained within an argon buffer gas undergoing supersonic expansion allowing for efficient rotational cooling. Carbon-13 and nitrogen-15 isotopologues were measured in natural abundance and substitution coordinates have been determined. The barrier to internal rotation of the methyl group was found to be  $122.697(20) \text{ cm}^{-1}$ . Nuclear quadrupole coupling constants for the two nitrogen nuclei were determined via a rigid rotor fit of the *A* internal rotor state. Complexes with water and argon were also observed and fit in a similar way.