

## SENSITIVE FLUORESCENCE SPECTROSCOPY OF JET COOLED $^{15}\text{NO}_2$

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A spectroscopic setup designed for high resolution spectroscopy of jet cooled  $^x\text{O}^y\text{N}^z\text{O}$  isotopologues is described with the aim to obtain high quality laboratory spectra for the study of the mass independent effect in this triatomic molecule. A special piezo valve allows operation at minimal gas consumption and time gated fluorescence spectroscopy is used as a highly sensitive detection technique. The performance of the setup is demonstrated on the first  $\text{A}^2\text{B}_2 - \text{X}^2\text{A}_1$  rovibronic transitions of  $^{15}\text{N}^{16}\text{O}_2$  measured in a jet. The gas consumption is as low as  $0.025 \text{ mg per cm}^{-1}$  spectral range. Special efforts have been made to extend applications to lower energies, using a  $\text{LN}_2$  cooled germanium detector.

[1] E.A. Volkers, A. Vredenburg, H. Linnartz, J. Bulthuis, S. Stolte, R. Jost, *Chem. Phys. Lett.*, submitted (2004).