

MEASUREMENTS OF NEW LINE POSITIONS AND EFFECTIVE LINE INTENSITIES OF CIS-HONO OF THE ν_2 BAND AROUND 1660 cm^{-1} USING QUANTUM CASCADE LASER ABSORPTION SPECTROSCOPY

NHUT MINH NGO, *Laboratoire de Physico-Chimie de l'Atmosphère, Université du Littoral Côte d'Opale, Dunkerque, France*; QIAN GOU, *School of Chemistry and Chemical Engineering, Chongqing University, Chongqing, China*; NICOLAS HOUZEL, TONG NGUYEN-BA, CÉCILE COEUR, WEIDONG CHEN, *Laboratoire de Physico-Chimie de l'Atmosphère, Université du Littoral Côte d'Opale, Dunkerque, France*.

Observation of HONO concentration change in the atmosphere can improve our understanding of atmospheric chemistry details and their effects on the regional air quality and global climate [1]. However, highly desired spectral line parameters of the most intense bands of HONO in the mid-IR for optical sensing are not available in the common databases like the HITRAN or the GEISA. We report on recent investigation of about 60 new line positions and their effective line strengths of cis-HONO of the ν_2 band in the range of $1660.0\text{--}1662.2\text{ cm}^{-1}$ using direct quantum cascade laser absorption spectroscopy coupled to a multi-pass cell ($L_{eff}=100\text{ m}$). The HONO absorption frequencies were absolutely determined using a λ -meter with an accuracy of 0.002 cm^{-1} . The effective line intensities were determined by scaling the measured HONO absorption intensities to the line strengths of two previously reported HONO lines located in the same spectral region near 1659.85 cm^{-1} [2]. The experimental details and the preliminary results will be presented and discussed.

Acknowledgments. The authors thank the financial supports from the regional CPER CLIMIBIO program, the national ANR projects of Labex CaPPA (ANR-10-LABX005) and MULTIPAS-2 (ANR-16-CE04-0012).

References

- [1] B.J. Finlayson-Pitts, and J.N. Pitts, Jr., *Chemistry of the Upper and Lower Atmosphere*, Academic Press, New York, 273–276 (2000).
- [2] B.H. Lee, E.C. Wood, J. Wormhoudt, J.H. Shorter, S.C. Herndon, M.S. Zahniser, and J.W. Munger, Effective line strengths of trans-nitrous acid near 1275 cm^{-1} and cis-nitrous acid at 1660 cm^{-1} , *J. Quant. Spectrosc. Radiat. Transfer* 113 (2012) 1905-1912.