

ON THE ADVANTAGES OF SYNCHROTRON RADIATION FOR HIGH-RESOLUTION FOURIER-TRANSFORM ABSORPTION SPECTROSCOPY IN THE FAR INFRARED

O. PIRALI, J. ORPHAL, M. VERVLOET, *Laboratoire de Photophysique Moléculaire, CNRS, Bât. 350, 91405 Orsay Cedex, France*; J.-B. BRUBACH, and P. ROY, *Laboratoire d'Utilisation de Rayonnement Electromagnétique, CNRS, B. P. 34, 91898 Orsay Cedex, France*.

For high-resolution Fourier transform spectroscopy in the far infrared, there are some advantages of synchrotron radiation over conventional broad-band light sources (e.g. mercury lamps and glowbars). The radiation emitted by accelerated electrons or positrons in a synchrotron storage ring has interesting properties in this spectral range, that will be discussed briefly in this talk.

We have recently started to investigate the properties of far-infrared synchrotron radiation using a Bomem DA 8.004 Fourier transform spectrometer (FTS) operated at the Super-ACO storage ring in Orsay (beamline SIRLOIN).^a The synchrotron source and the FTS were coupled to a 100 cm baselength White-type multi-pass absorption cell. High-resolution far-infrared spectra of the most abundant water isotopomers as well as of nitrogen oxides and acids of atmospheric relevance were recorded. Comparisons of the spectral parameters with previous studies will be presented.

^aP. Roy, J.-B. Brubach, P. Calvani, G. De Marzi, A. Filabozzi, A. Gerschel, P. Giura, S. Lupi, O. Marcouillé, A. Mermet, A. Nucara, J. Orphal, A. Paolone, and M. Vervloet: "Infrared Synchrotron Radiation: From the Production to the Spectroscopic and Microscopic Applications", *Nuclear Instruments and Methods in Physics Research A* 467/468, 426-436, 2001.