BROADENING AND SHIFT COEFFICIENTS IN THE ν_2 BAND OF HCN

M. A. H. SMITH, C. P. RINSLAND, *Atmospheric Sciences, NASA Langley Research Center, Hampton, VA 23681-2199*; V. MALATHY DEVI, D. CHRIS BENNER, *Department of Physics, The College of William and Mary, Williamsburg, VA 23187-8795*; S. W. SHARPE and R. L. SAMS, *Pacific Northwest National Laboratory, Richland, WA 99352*.

Infrared spectra of HCN in the 14 μm region were recorded at 0.008 and 0.005 cm^{-1} resolution using two different Fourier transform spectrometers (FTS), the McMath-Pierce FTS at the National Solar Observatory on Kitt Peak and the Bruker IFS 120 HR FTS at the Pacific Northwest National Laboratory. Spectra were recorded with pure HCN as well as mixtures of HCN in air at temperatures between $+26°$C and $-60°$C.

Using our multispectrum technique,[a] we fit over 30 spectra simultaneously to determine self-broadening and shift coefficients and air-broadening and shift coefficients and their temperature dependences for lines belonging to the $H^{12}C^{14}N$ ν_2 band centered near 712 cm^{-1}. In addition, we were able to determine broadening and shift parameters for some lines belonging to hot bands and isotopic bands. The results will be compared with our previous measurements in the $2\nu_2$ band[b] and in the ν_1 band[c] and with other measurements available in the literature.

[a] D. Chris Benner, C. P. Rinsland, V. Malathy Devi, M. A. H. Smith and D. Atkins, *JQSRT* **53**, 705-721 (1995).

[b] V. Malathy Devi et al., *JQSRT*, in press (2004).

[c] V. Malathy Devi et al., *JQSRT* **82**, 319-341 (2003); C. P. Rinsland et al., *JQSRT* **82**, 343-362 (2003).