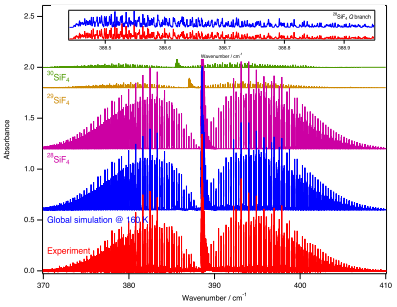
DETAILED ANALYSIS OF THE INFRARED SPECTRUM OF SiF_4: AN UPDATE

VINCENT BOUDON, *Laboratoire ICB, CNRS/Université de Bourgogne, DIJON, France*; LAURENT MANCERON, *Synchrotron SOLEIL, CNRS-MONARIS UMR 8233 and Beamline AILES, Saint Aubin, France*.

Silicon tetrafluoride (SiF_4) should be a normal trace component of volcanic gases. However, a better knowledge of spectroscopic parameters is needed for this molecule in order to derive accurate concentrations.



As explained last year, we undertook an extensive high-resolution study of its infrared absorption bands, for the there isotopologues in natural abundance: $^{28}SiF_4$ (92.23 %), $^{29}SiF_4$ (4.67 %) and $^{30}SiF_4$ (3.10 %). We present here an update of this study. It includes a new global fit with consistent parameter sets for the ground and excited states (the Figure on the right presents the ν_4 bending fundamental region). In particular, all existing rotational line data have been included. The $2\nu_4$ band of $^{28}SiF_4$ could also be analyzed in detail. A first rough estimates of the dipole moment derivative for the ν_3 band has been performed, leading to to an integrated band intensity which is consistent with literature values, around 680 km/mol. The isotopic dependance of band centers and Coriolis parameters has been studied, thanks to the formula presented in talk P4363.