THE HIGH RESOLUTION INFRARED SPECTRUM OF THE LOWER WAVENUMBER BANDS OF $^{34}SO_2$

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The infrared spectrum of sulfur dioxide becomes of importance after volcanic eruptions in which large amounts of SO_2 are emitted into the atmosphere. While the spectrum of the normal species, $^{32}SO_2$, has been very well studied and an excellent set of molecular constants obtained, this is not the case for the rarer isotopic species, $^{34}SO_2$, the abundance of which is about 4.2% of the normal species. In order to improve our knowledge of the $^{34}SO_2$ spectrum we have studied a sample of SO_2 enriched to 95% in ^{34}S over a wavenumber region including all the fundamental bands, the relatively strong combination bands ν_2+ν_3 and ν_1+ν_3 as well as the weaker 2ν_1+ν_3 and 2ν_3 bands. The resolution was 0.0019 cm^{-1}. The two lowest hot bands of the bending mode, ν_2, have also been assigned as well as the hot bands of the other two fundamental bands and the ν_1+ν_2+ν_3-ν_2 band. The spectroscopic constants obtained will be presented.