DETECTION OF SiOH (X^2A') BY FOURIER TRANSFORM MICROWAVE SPECTROSCOPY

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The rotational spectrum of the free radical SiOH in its X^2A' ground electronic state has been observed by Fourier transform microwave spectroscopy. The $1_{0,1} - 0_{0,0}$ transition has been detected for the main species ^{28}Si^{16}OH and for the rare isotopic species ^{30}Si^{16}OH, Si^{18}OH, and SiOD. The same transition has also been observed in the excited vibrational states $v_2 = 1$ and $v_3 = 1$ for the most abundant species. From this data, precise spectroscopic constants have been derived for this plausible astronomical molecule, as has an experimental structure (r_0).
In addition, the $1_{0,1} - 0_{0,0}$ transition of HNSi has been detected at high spectral resolution by the same technique, yielding a precise value for the nitrogen quadrupole coupling constant.