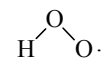


233  
FTSHO<sub>2</sub>

Hydrogenperoxyl

C<sub>s</sub>

State	$\tilde{X}^2A''$	$\tilde{A}^2A'$
Energy [eV]	0.00	0.8716
$r_0(\text{O}-\text{O})$ [Å]	1.3338(20)	1.4121(20)
$r_0(\text{O}-\text{H})$ [Å]	0.9775(50)	0.9404(30)
$\theta_0(\text{H}-\text{O}-\text{O})$ [deg]	104.16(100)	95.36(120)

HO<sub>2</sub> and DO<sub>2</sub> radicals were produced by the reaction of oxygen atoms with CH<sub>3</sub>OH and CD<sub>3</sub>OD and were excited to the  $\tilde{A}^2A'$  state by electronic-to-electronic (E-E) energy exchange in collisions with metastable oxygen molecules. Emission spectra were recorded with a Fourier-transform spectrometer. Rotational analyses of the 000-000 bands of HO<sub>2</sub> [1] and DO<sub>2</sub> [2] yielded molecular constants from which the geometric structures were deduced. The *A* and *B* constants were used in each case since the *C* constants may be influenced by Coriolis interactions. For the excited state it is possible that the *A* constants are influenced by Renner-Teller interactions. The ground state parameters are in excellent agreement with earlier values but for the excited state there is a small disagreement with theory [3].

[1] Fink, E.H., Ramsay, D.A.: J. Mol. Spectrosc. **185** (1997) 304.

[2] Fink, E.H., Ramsay, D.A.: J. Mol. Spectrosc. **216** (2002) 322.

[3] Jensen, P., Buenker, R.J., Gu, J-P., Osmann, G., Bunker, P.R.: Can. J. Phys. **79** (2001) 641.

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