

THz SPECTROSCOPY OF THE  $a^1\Delta_g$  STATE OF  $O^{18}O$  AND  $^{18}O_2$ .

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Submillimeter-wave rotational spectra of  $O^{18}O$  and  $^{18}O_2$  in the  $a^1\Delta_g$  state have been detected in a new static discharge cell useful for studying rare isotopologues of transient molecules. Rotational transition frequencies of both species have been measured through 1.6 THz, to better than 1 part in  $10^7$ , allowing precise determination of molecular constants. The first measurements with our static discharge cell provide a check on the isotopic predictions in the  $a^1\Delta_g$  state.