THE FOURIER TRANSFORM MICROWAVE SPECTRUM OF YOH AND YOD ($\tilde{X}^1\Sigma^+$)

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The pure rotational spectra of YOH and YOD ($\tilde{X}^1\Sigma^+$) have been recorded in the 4 - 40 GHz range using Fourier transform microwave (FTMW) techniques. These species were created in a supersonic jet expansion of laser ablated yttrium vapor and either H_2O or D_2O vapor. The J = 1 $\rightarrow$ 0 and 2 $\rightarrow$ 1 rotational transitions have been measured for both YOH and YOD. The data have been analyzed, and rotational and centrifugal distortion constants have been determined. Metal hydroxides can possess either a linear or bent geometry. The structure of this species has been determined from these data to be linear, in agreement with previous electronic spectra. YOH is only the second 4d transition metal hydroxide, after AgOH - a bent species, to have its pure rotational spectrum measured.