DIRECT MEASUREMENT OF CATALYTIC OXIDATION OF SO_2 BY A K-BAND MOLECULAR ROTATIONAL RESONANCE SPECTROSCOPY

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A Molecular rotational resonance (MRR) spectrometer, which operates in the 18-26GHz, has been evaluated for monitoring the oxidation process of SO_2 and O_2 in the presence of $\mathrm{NH_4VO_3}$. This work is performed as a part of effort to determine the utility of rotational spectroscopy as a tool for monitoring the conversion of SO_2 to $\mathrm{H_2SO_4}$. The initial MRR measurements revealed the reduction of $SO_2$and the presence of small polar impurities (i.e., water vapor and ammonia). The current data have been further employed to validate K-Band MRR for SO_2 removal. The MRR maintains its linearity confirming its strength to monitor the removal of SO_2 in presence of other polar impurities. Work to improve this analytical procedure is underway and will be reported in this talk.