

HIGHLY SELECTIVE GAS ANALYZER BASED ON MOLECULAR ROTATIONAL RESONANCE SPECTROSCOPY FOR SO₂ MONITORING IN AMBIENT AIR

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As part of the efforts to determine the applications of molecular rotational resonance (MRR) technique to SO₂ monitoring in ambient air, a K-band MRR analyzer has been employed to record the MRR signature of multiple synthetic air samples containing SO₂ pollutant as well as that of standard SO₂ samples. The observed MRR features reveal a rich rotational pattern due to MRR's sensitivity. The interfering matrix (i.e., air moisture), which typically challenges other conventional techniques, showed no impact on MRR signatures of SO₂. The validity of MRR for SO₂ monitoring has been examined by measuring MRR signal response of a set of standard SO₂ samples over a range of sampling pressures (5-15). The obtained linear correlations allowed the determination of recovery percentage (97-100%) and low detection limit of better than 1mg/m³. Work to improve this analytical procedure is underway and will be reported in this talk.