TUNABLE INFRARED SPECTROMETER BASED ON DIFFERENCE-FREQUENCY GENERATION IN $AgGaS_2$ FOR LINESHAPE STUDIES IN $N_2O$

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A high resolution (2MHz) and high signal-to-noise ratio , cw, tunable, infrared spectrometer is presented. It is based on the difference-frequency generation technique and consists of combining two tunable ring dye lasers in a nonlinear crystal of $AgGaS_2$. The present output wavelength range is 7.8 to 9.1 microns. With total input power of 400 mW, the output power exceeds 100 nW at the peak of the emission curve. The spectrometer is currently used for line shape studies in the $03^10 \leftarrow 01^10$ Q branch of $N_2O$, at 8.6 microns