MULTI-WAVELENGTH MEASUREMENT OF BUS EXHAUSTS USING A FOUR QC LASER SPECTROMETER

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Using a portable, lightweight, four laser intra-pulse quantum cascade laser spectrometer we have measured the variation of the composition of exhaust gases emitted by diesel engined buses which are representative of the decades from the 1930's until the 1990's. The lasers and the fast detector used in the spectrometer are Peltier cooled, and the spectra are recorded using each laser in turn, in a repeated four laser cycle. The instrument is controlled via a ruggedised laptop computer. The wavelengths of the lasers used were 7.84 microns (methane, nitrous oxide and formaldehyde), 6.13 microns (nitrogen dioxide) 5.25 microns (nitric oxide and water) and 4.88 microns (carbon monoxide and carbon dioxide). The path length of the multiple pass absorption cell used was 77 m. The results we will present demonstrate the possibility of deploying this type of instrument for investigating gas emissions from a variety of sources.