CAVITY ENHANCED ABSORPTION SPECTROSCOPY IN THE 0.8 μm REGION

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Since the pioneering work by O'Keefe and Deacon,[a] cavity ring down spectroscopy has been widely recognized as a sensitive technique for absorption spectroscopy. A variation of the technique, cavity enhanced absorption spectroscopy (CEAS) combined with phase sensitive detection initiated by Peeters *et al*.[b] has been adopted in our laboratory using our newly built high resolution Ti:sapphire laser spectrometer and a 1.5 meter cavity ring down cell sealed with high reflection (>99.97%) concave mirrors. Comparing to the typical CEAS using a fast digital oscilloscope, this implementation improves the signal-to-noise ratio by a factor of 2-3 for the transitions of acetylene in the 0.8 μm region. In this paper, the experimental setup and the performance of our system will be discussed.

[a] A. O'Keefe and D. A. G. Deacon, Rev. Sci. Instr. 59, 2544 (1988).

[b] R. Peeters, G. Berden, A. Ólafsson, L. J. J. Laarhoven, and G. Meijer, Chem. Phys. Lett. 337, 231 (1991).