

PROGRAMME & ABSTRACTS

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Cavity Ring down Spectrometry for Disease Diagnostics Using Exhaled Air

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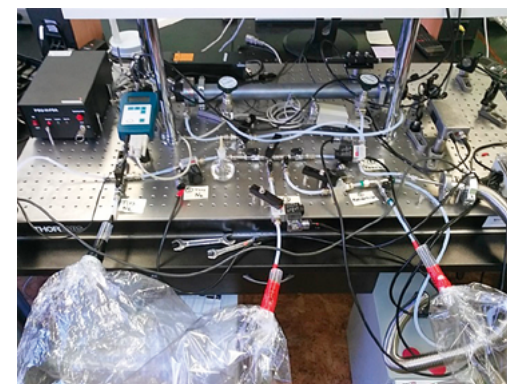
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Cavity ring down spectrometry (CRDS) is a very sensitive spectrometric technique based on the absorption. We will report the development stage and first results of a cavity ring-down spectrometer system for the diagnostics of different diseases like diabetes and lung cancer using human breath analysis. Normal human breath contains many volatile organic compounds (VOC) in a very low concentration. Our CRDS is a portable system, placed on an optical breadboard [1]. The core part of the CRDS system is a resonator with high reflectivity mirrors at the both ends. We use pulsed Nd:Yag laser at 266 nm. A PMT and an oscilloscope register the CRDS signal. The concentration of VOC particles in the breath samples, let in in the resonator, is estimated from the exponential fit to the ring-down signal. First experiments allow us to determine acetone and benzene at the level below ppm. Breath samples from smokers are analysed.



Cavity ring-down spectrometer system for breath analysis.

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[1] G. Revalde et al, Cavity Ring-Down Spectroscopy measurements of Acetone concentration, IOP Conf. Series: Journal of Physics: Conf. Series 810 (2017) 012036.