

# Measurement of Ethanol Concentration in Water Solution with a Long Period Fiber Grating Transducer

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**Abstract** — This work investigates the applicability of a long period fiber grating as a transducer to measure the concentration of ethanol in water. The device performance was analyzed considering its sensitivity, resolution, repeatability, linearity and uncertainty when the device was interrogated in wavelength and amplitude. The amplitude and resonance wavelength of the grating dip was measured with the device immersed in samples obtained from the mixture of ethanol and pure water in proportions ranging from 0 % to 99.6 %. The results showed that the transducer can be used to determine the ethanol-water concentration with resolution of until 0.23 %.

**Key-words** — Long period fiber grating, concentration transducer, ethanol-water solution.