**Acetone Sensing with Optical READout Using**

**SIo2 thin films**

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Engineering properties of metal oxide thin films is of utmost importance for having broader application and better functionality in areas such as catalysis, sensing and energy conversion. Despite of the fact that silica is well studied material it still attracts attention for different photonic applications. One way to tailor its properties and obtain more functionalities is to introduce porosity in the films and thus modulate the refractive index to lower values. In such a way the films become an active media for VOC sensing.

In this study the formation of porous thin films is studied deposited by spin-coating technique. Porosity is generated by soft-template method using the commercially available organic templates and evaporation induced self-assembly method. Optical properties of the films have been calculated by nonlinear curve fitting method and UV-Vis spectroscopy. The morphology of the films has been investigated by Transmission Electron Microscopy. The film reaction to vapors has been recorded prior to and after exposure to acetone as a probe molecule. Bruggeman effective medium has been employed to estimate the physisorbed acetone quantity in the porous medium. The implementation of so-prepared thin films as a building block in Bragg reflectors has been modeled and discussed.

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