VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"DESIGN AND FABRICATION OF GAS SENSOR USING SOL-GEL SPIN COATING TECHNIQUE FOR THE DETECTION OF ETHANOL"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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CERTIFICATE

Certified that the project work entitled "DESIGN AND FABRICATION OF GAS SENSOR USING SOL-GEL SPIN COATING TECHNIQUE FOR THE DETECTION OF ETHANOL" is a bona fide work carried out by

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in partial fulfillment for the award of **BACHELOR** OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2019-2020. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

Sensors plays a vital role in an integral part of our daily life. Sensors have found their application in the field of medical science, industries and to analyse the parameters of atmosphere such as temperature, humidity, pressure, toxic gases etc. Gas sensors are one of the groups belongs to the category of sensors, are often used to detect the presence of toxic gases in the environment usually used as a part of safety system. Most of the industries produces ethanol as one of their biproduct, impacts skin irritation and causes allergy for the people working in industries and alcohol abuse affects user's behaviour which intensifies violence and accidents in the society. The major share of ethanol is present in alcoholic beverages therefore, there is a need to monitor. Due to significant uplift in nanotechnology over a period, gas sensors are preferred to detect such kind of gases because of its simple and robust construction. The device can be considered as a sensor only when it encounters the change in environment, this change should be monitored. In this paper zinc oxide thin film has been designed and fabricated using novel sol-gel spin coating technique to detect ethanol vapours at RT. The thin film deposition can be achieved by two ways i.e., physical vapour deposition (PVD) and chemical vapour deposition (CVD). CVD is favoured has it deals with chemical solution which influences low cost. Structural and morphological characteristics has been analysed using Scanning Electron microscope (SEM). Various sensing parameters such as recovery time, response time and sensitivity have been measured and sensor results in response of ~50% for 100ppm of ethanol at RT.