

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“Jnana Sangama” Belagavi – 590 010**



**PROJECT REPORT ON**  
**“DEVELOPMENT OF POLYANILINE COMPOSITE**  
**BASED HUMIDITY SENSOR”**

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

**BACHELOR OF ENGINEERING**  
**IN**  
**ELECTRONICS & COMMUNICATION ENGINEERING**

**Submitted By**

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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY**

**MOODBIDRI – 574 225.**

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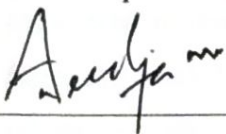
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

## CERTIFICATE

*Certified that the project work entitled "DEVELOPMENT OF POLYANILINE COMPOSITE BASED HUMIDITY SENSOR" is a bona fide work carried out by*

Abhishek	4AL17EC001
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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 2020–2021. 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.



Signature of the Guide

Mr. Aneesh Jain M V

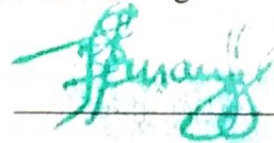


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Name of the Examiners

Signature with date

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## ABSTRACT

Humidity sensors have gained increasing applications in industrial processing and environmental control. For manufacturing highly sophisticated integrated circuits in semiconductor industry, humidity or moisture levels are constantly monitored in wafer processing. There are many domestic applications, such as intelligent control of the living environment in buildings and laundry, cooking control for microwave ovens, etc. In automobile industry, humidity sensors are used in rear window defoggers and motor assembly lines. In medical field, humidity sensors are used in respiratory equipment, sterilizers, incubators, pharmaceutical processing, and biological products. In agriculture, humidity sensors are used for green-house air-conditioning, plantation protection, soil moisture monitoring, and cereal storage. In general industry, humidity sensors are used for humidity control in chemical gas purification, dryers, ovens, film desiccation, paper and textile production, and food processing.

A new processable and humidity sensitive chitin-polyaniline blend has been developed. Polyaniline is blended with chitin by solution blending method. The free standing films of blends are stable under ambient condition. The characterization of the blends is done by UV-vis absorption spectrum, FTIR, conductivity studies, thermogravimetric analysis and SEM. Spectroscopic analysis shows interaction between chitin and polyaniline and the electronic states are similar to those of the emeraldine and protonically doped forms of polyaniline. These blend films are used for the construction of resistive based humidity sensor. A linear response of resistance with humidity is observed. It shows a small hysteresis and its response is stable even after 25 cycles of humidity exposure. Effect of electron beam irradiation on the humidity response has also been studied.