

Flexible Sensor For Agriculture Applications





P01

INTRODUCTION

The project presents the design and fabrication of a flexible humidity sensor using screen printing technology. The structure consists of a thick film with **Silver (Ag) interdigitated (IDE)** electrodes and **Carbon Nanotube (CNT) sensing layer** fabricated on **a flexible substrate.** The resistance change to presence of water is measured. As a result, the resistance value varies proportionally with the amount of water covering the sensor.

MATERIALS & METHODS



RESULTS & DISCUSSION



Line graph of Water coverage on CNT sensing layer (%) vs Resistance(Ω).

Water coverage on sensing layer (%)	Resistance of sensor A (Ω)	Resistance of sensor B (Ω)
0%	15.4	21.3
20%	21.8	24.9
40%	34.6	37.4
60%	39.5	43.6
80%	53.3	56.9
100%	61.1	68.2

Resistance of sensor A & sensor B(2).

The figure shows the Proteus schematic and physical circuitry to simulate humidity presence.

CONCLUSION

The resistance value changes is directly proportional to the quantity of water present on the sensor. The flexible humidity sensor has been successfully designed, fabricated using screen printing technology and characterized.

Suggestion/Recommendation:

For better fabrication performance and characterization, it is recommended to utilize automated fabrication technology, enhance connectivity, and apply the packaging of sensors and establish a more effective test setup.

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Tabulated data of Water coverage on CNT sensing layer (%) vs Resistance of sensor A & sensor B(Ω).