

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

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



**PROJECT REPORT ON  
“DESIGN AND IMPLEMENTATION OF  
PIEZOELECTRIC NANO MATERIALS FOR ENERGY  
HARVESTING”**

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

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

**Submitted By**

**Name**

**Kishore N**

**M Manjunatha**

**Mohanababu D G**

**Nagaganesh N**

**USN**

**4AL17EC042**

**4AL17EC047**

**4AL17EC053**

**4AL17EC057**

**Under the Guidance of  
Dr. Mrinmoy Misra**

**Senior Assistant Professor**

**Department of E&C Engineering**



**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

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

**MOODBIDRI – 574 225.**

**2020-2021**

# ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

MOODBIDRI – 574 225

(Affiliated to VTU, BELAGAVI)

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

### CERTIFICATE

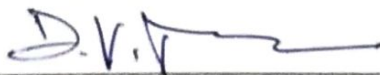
*Certified that the project work entitled "DESIGN AND IMPLEMENTATION OF  
PIEZOELECTRIC NANO MATERIALS FOR ENERGY HARVESTING" is a bona fide  
work carried out by*

Kishore N	4AL17EC042
M Manjunatha	4AL17EC047
Mohanababu D G	4AL17EC053
Nagaganesh N	4AL17EC057

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  
Dr. Mrinmoy Misra



Signature of the H.O.D  
Dr. D V Manjunatha  
H. O. D.  
Dept. Of Electronics & Communication  
Alva's Institute of Engg. & Technology  
Mijar, Moodbidri - 574 225



Signature of the Principal  
Dr. Peter Fernandes  
PRINCIPAL  
Alva's Institute of Engg. & Technology  
Mijar, Moodbidri - 574 225, D.K

### EXTERNAL VIVA

Name of the Examiners

Signature with date

1.....

.....

2.....

.....

## ABSTRACT

Energy reaping is a promising strategy that can assist with addressing the worldwide energy challenge without exhausting normal assets. As one of the efficient power energy arrangements, energy collecting can decrease ozone depleting substance emanation produced with conventional fuel sources. Piezoelectric, thermoelectric, electromagnetic, and photovoltaic strategies are a few instances of energy gathering innovations that can be utilized to gather energy from the encompassing climate to create power these days. These advances work in various standards and accordingly have diverse application necessities and energy transformation efficiencies.

In this proposed project is to overcome the scarcity of the electric energy, through naturally occurring piezo electric materials (Quartz, Barium Titanium, zinc, sodium bismuth titanate, lead zirconium titanate)etc, especially in our project we considered the zinc oxide (ZnO) as piezoelectric material. By this we successfully fabricated and tested the piezoelectric nano generator with the output voltage range of ~30mV, at room temperature.