

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“Jnana Sangama” Belagavi – 590010



PROJECT REPORT ON

**“Design and Development of DMFC using
PVA-PANI Composite on Nafion
Membrane”**

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

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

Submitted By

Poorvi H J	4AL15EC071
Varshitha	4AL17EC092
Yalpi Nandika	4AL17EC096
Yathish S Rao	4AL17EC100

Under the Guidance of

Dr. D V Manjunatha

Senior 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 Development of DMFC using PVA-PANI Composite on Nafion Membrane**" is a bona fide work carried out by

Poorvi H J	4AL17EC071
Varshitha	4AL17EC092
Yalpi Nandika	4AL17EC096
Yathish S Rao	4AL17EC100

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

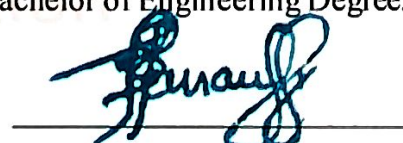
Dr. D V Manjunatha



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

EXTERNAL VIVA

Name of the Examiners

Signature with date

1.....

.....

2.....

.....

ABSTRACT

The Direct Methanol Fuel Cell (DMFC) is the replacement of Lithium-Ion batteries in almost all the portable electronic gadgets, in which current DMFCs operate at twice the power density of current lithium-ion batteries with instant refuel competence. It's known that, the DMFC will provide higher power densities, only if the core of this fuel cell – the Polymer Electrolyte Membrane (PEM) were more resistant to the fuel (methanol). Therefore, the design and development of Nafion® (the most commonly used PEM in fuel cells) substitutes that exhibit high proton conductivity and low methanol permeability (high selectivity) is an active area of research. Polymer blends are a modest and lucrative method to progress membranes that conjoin the desired transport properties. To date, there is partial research in the area of PEM blends, and furthermore, a number of unresolved questions.

In this study, the properties of blend composition, chemistry, and processing on polymer morphology and afterward the transport properties and selectivity were examined. An important effect in this study is comparison solution of cast membranes to heat pressed membranes. The final objective is to match both the membranes to provide immiscible blends with low selectivity, while also with the literature survey annealed solution cast membranes improved miscibility and subsequently selectivity. The outcome with this study is to find the DMFC.