Karnataka State Council for Science and Technology

(An autonomous organisation under the Dept. of Science & Technology, Govt. of Karnataka)
Indian Institute of Science Campus, Bengaluru – 560 012
Telephone: 080-23341652, 23348848, 23348849, 23348840
Email: office.kscst@iisc.ac.in, office@kscst.org.in • **Website:** www.kscst.iisc.ernet.in, www.kscst.org.in

KSCST

Dr. U T Vijay
Executive Secretary

24th April, 2023

Ref: 7.1.01/SPP/33

To,
The Principal,
Alva's Institute of Engineering and Technology,
Shobavana Campus, Mijar,
Moodbidri - 574 225.

Dear Sir/Madam,

Sub : Sanction of Student Project - 46th Series: Year 2022-2023

Project Proposal Reference No. : 46S_BE_2950
Ref : Project Proposal entitled **FERTILIZER TESTING MACHINE USING NPK**

We are pleased to inform that your student project proposal referred above, has been approved by the Council under "Student Project Programme - 46th Series". The project details are as below:

Student(s)	Mr. VYBHAV GOWDA M	**Department**	ELECTRONICS AND COMMUNICATION ENGINEERING
	Mr. RAHUL S		
	Ms. NIVEDITHA A		
	Ms. SHWETHA H M	**Sanctioned Amount (in Rs.)**	6,000.00
Guide(s)	Mr. GURUPRASAD B		

Instructions:

a) The project should be performed based on the objectives of the proposal submitted.
b) Any changes in the project title,objectives or students team is liable for rejection of the project and your institution shall return the sanctioned funds to KSCST.
c) Please quote your project reference number printed above in all your future correspondences.
d) After completing the project, 2 to 3 page write-up (synopsis) needs to be uploaded on to the following Google Forms link https://forms.gle/nWTaJjvrwzp3Wmvt6. The synopsis should include following:
   1) Project Reference Number
   2) Title of the project
   3) Name of the College & Department
   4) Name of the students & Guide(s)
   5) Keywords
   6) Introduction / background (with specific reference to the project, work done earlier, etc) - about 20 lines
   7) Objectives (about 10 lines)

8) Methodology (about 20 lines on materials, methods, details of work carried out, including drawings, diagrams etc)

9) Results and Conclusions (about 20 lines with specific reference to work carried out)

10) Scope for future work (about 20 lines).

e) In case of incompeted projects, the sanctioned amount shall be returned to KSCST.

f) The sanctioned amount will be transferred by NEFT to the bank account provided by the College/Institute.

g) The sponsored projects evaluation will be held in the Nodal Centre/Online Mode and the details of the same will be intimated shortly by email / Website announcement.

h) After completion of the project, soft copy of the project report duly signed by the Principal, the HoD, Guide(s) and studetn(s) shall be uploaded in the following Google Forms Link https://forms.gle/YWz56TrGg7fnSQgc7. The report should be prepared in the format prescribed by the university.

Please visit our website for further announcements / information and for any clarifications please email to spp@kscst.org.in

Thanking you and with best regards,

Yours sincerely,

(U T Vijay)

Copy to:

1) The HoD
ELECTRONICS AND COMMUNICATION ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

2) Mr. GURUPRASAD B
ELECTRONICS AND COMMUNICATION ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRI

3) THE ACCOUNTS OFFICER
KSCST, BENGALURU

Siddesh

H.O.D.
Dept. Of Electronics & Communication
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 018

PROJECT REPORT ON

"FERTILIZER QUALITY TESTING MACHINE USING IR SPECTROSCOPY"

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

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

Name	USN
NIVEDITHA A	4AL19EC052
RAHUL S	4AL19EC062
SHWETHA H M	4AL19EC075
VYBHAV GOWDA	4AL19EC087

Under the Guidance of
Dr. GURUPRASAD B
Senior Assistant Professor
Department of E&C Engineering

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
A+, Accredited by NAAC & NBA (ECE & CSE)
MOODBIDRI – 574 225.

2022-2023

ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
A+, Accredited by NAAC & NBA (ECE & CSE)

MOODBIDRI – 574 225

(Affiliated to VTU, BELAGAVI)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

Certified that the project work entitled "**FERTILIZER QUALITY TESTING MACHINE USING IR SPECTROSCOPY**" *is a bona fide work carried out by*

NIVEDITHA A	**4AL19EC052**
RAHUL S	**4AL19EC062**
SHWETHA H M	**4AL19EC075**
VYBHAV GOWDA	**4AL19EC087**

in partial fulfillment for the award of BACHELOR OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2022–2023. 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	**Signature of the H.O.D**	**Signature of the Principal**
Dr. Guruprasad B	**Dr. Siddesh G.K**	**Dr. Peter Fernandes**
	Dept. Of Electronics & Communication Alva's Institute of Engg. & Technology Mijar, MOODBIDRI - 574 225	PRINCIPAL Alva's Institute of Engg. & Technology Mijar, MOODBIDRI - 574 225, D.K

EXTERNAL VIVA

Name of the Examiners	Signature with date
1. Harsha C.J	24/5/23
2. Dr. SIDDESH GK	Siddesh 24.5.23

ABSTRACT

The quality assessment of fertilizers is crucial for ensuring optimal agricultural productivity and environmental sustainability. This abstract introduces a novel approach for evaluating fertilizer quality using infrared (IR) spectroscopy. IR spectroscopy offers a rapid, non-destructive, and cost effective method for analysing the chemical composition of materials.

The proposed Fertilizer Quality Testing Machine employs IR spectroscopy to analyse various parameters, including nutrient content, impurities, and chemical composition of fertilizers. The system consists of an IR light source, sample chamber, detector, and data analysis software. Fertilizer samples are placed in the sample chamber, and IR light is passed through the sample. The resulting spectrum is captured by the detector and processed using advanced algorithms. By comparing the obtained IR spectra with a comprehensive spectral library, the machine can determine the concentration of essential nutrients such as nitrogen, phosphorus, and potassium in the fertilizer samples. Additionally, it can identify and quantify impurities, such as heavy metals or organic contaminants, which can have detrimental effects on crop growth and soil health. The data analysis software provides real-time analysis, displaying the nutrient composition and impurity levels of the tested fertilizer samples. The machine can generate detailed reports, allowing farmers and fertilizer manufacturers to make informed decisions regarding the selection and application of fertilizers.

Compared to traditional methods of fertilizer quality testing, the Fertilizer Quality Testing Machine using IR spectroscopy offers several advantages, including reduced testing time, improved accuracy, and cost-efficiency. It eliminates the need for complex chemical analyses and minimizes sample preparation requirements.

The proposed machine has the potential to revolutionize fertilizer quality testing, enabling farmers to optimize nutrient management, improve crop yields, and minimize environmental impact. Future enhancements could include the integration of machine learning algorithms for automated identification of different fertilizer formulations and the development of portable, handheld devices for on-site analysis. Fertilizer quality testing, IR spectroscopy, nutrient analysis, impurity detection, agriculture, environmental sustainability.

Siddesh

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