3.1.1 Grants received from Government and non-governmental agencies for research projects / endowments in the institution during the year (INR

3.1.3 Number of departments having Research projects funded by government and non government agencies during the year

Name of the Project/ Endowments, Chairs	Name of the Principal Investigator/Co-investivator	Department of Principal Investigator	Year of Award	Amount Sanctioned	Duration of the project	Name of the Funding Agency	Type (Government/non-Government)
E-Umbrella	Mr.K.Babu, Assistant professor, Department of ECE, JCTCET	ECE	2022-2023	7500	1 Year	TNSCST	Government
Development of advanced nanotech steel using modern and effective nanotechnology	Dr.S.Kavitha, Professor and head, Department of Petrochemical	PCE	2022-2023	7500	1 Year	TNSCST	Government

JCT College of Engineering & Technology Pichanur CBE - 105.

PRINCIPAL
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தமிழ்நாடு அறிவியல் தொழில்நுட்ப மாநில மன்றம்
TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
(Established by Government of Tamilnadu)
Directorate of Technical Education Campus, Chennai – 600 025
Ph : 044-22301428, www.tanscst.nic.in

Dr.R.SRINIVASAN, M.Sc., Ph.D.,F.I.C.S., M.A.C.S.(USA).,
Member Secretary

Lr.No.TNSCST/SPS/BS/2022-2023

03.03.2023

To
The Principal
JCT College of Engg and Tech., Pichanur,
Coimbatore-641 105

Sir/Madam,

Sub: TNSCST – Student Project Scheme – 2022-2023 – approval intimation–grant release- reg.

With respect to the above scheme, the list of projects approved by the State Council is enclosed along with terms and conditions. You are requested to adhere to terms and conditions such as submission of UC and Seminar Paper on Time.

1.	Mr.Babu.K, Assistant professor, Department of ECE, JCT College of Engineering and Technology, Coimbatore - 641 105	E-Umbrella	Saranraj.S, K.P.Malavika, K.Praveenkumar,	EEE-643	The Principal	Rs 7500/-
2.	Dr.S.Kavitha, Professor and Head, Department of Petrochemical Engineering, JCT College of Engg and Tech., Pichanur, Coimbatore-641 105	Development of advanced nanotech steel using modern and effective nanotechnology	M. Mahesh Kannan, G. Kamalakannan, M. Mayur Mangesh Ghatkar, S. Dhanasekaran	CHE-066	The Principal	Rs 7500/-
					Total	**Rs 15000/-**

Herewith enclosed the cheque for the approved grant and disburse the grant to the concerned students through the guides at the earliest

Kindly send the utilisation certificate (format enclosed) and seminar paper (Ref.T&C) on completion of the project.

Thanking you,

Yours faithfully,

3/3/23

Member Secretary.

Encl: a) Terms & Conditions (T&C)
b) Format of Utilisation Certificate (UC)
c) Cheque for Rs.15000/- Cheque No:574844 dt.03.03.2023

Copy to: Individual Guides

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ALLAHABAD

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Pay The Principal, JCT College of Engineering and Technology OR BEARER
Coimbatore या धारक को

RUPEES रुपये Fifteen Thousand only.

अदा करें ₹ 15,000/-

SB	खा. सं. A/c. No.	479135159

FOR MEMBER SECRETARY, TAMILNADU STATE COUNCIL SCIENCE & TECHNOLOGY

CBS Code: 01636

AUTHORISED SIGNATORY

992000095

PAYABLE AT PAR AT ALL OUR BRANCHES

Please sign above

⑈574844⑈ 600019119⑆ 135159⑈ 31

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TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

DOTE campus, Chennai-600 025

STUDENT PROJECT SCHEME 2022-2023

Terms and Conditions for the granted SPS projects

1. Every sanctioned project will be given a Project code Number. Please refer to this number while corresponding with TNSCST.

2. The project team **SHOULD NOT** change the topic of the project and should not deviate from the objectives of the sanctioned proposal. In the event of any such changes, sponsoring will be treated as canceled and the college should return the sanctioned amount to TNSCST.

3. The sanctioned projects should be completed and the reports should be submitted before the end of **MAY 2023.**

4. On completion of the project, a soft copy (CD) of the final project report and **TWO** copies of 2-3 page seminar paper (500 words-MS Word format), utilization certificate (**UC**) and statement of expenditure (**SE**) should be sent to **The Member Secretary, Tamilnadu State Council For Science and Technology, DOTE Campus, CHENNAI-600 025.**

5. The seminar paper will be included in the form of PROCEEDINGS which will be brought out during the Seminar cum Exhibition, only for those who submit the **UC & SE.**

6. The Utilization Certificate and Statement of Expenditure should be countersigned by the GUIDE, HOD and Principal/Registrar with an official seal as the case may be.

7. The guides are responsible for the timely submission of SEMINAR PAPER, UC and SE.

8. It is mandatory for the project team (**anyone student**) should present and exhibit the findings before the experts in the Seminar cum Exhibition which will be organized during **JULY / AUGUST 2023.**

9. During the Seminar cum Exhibition, "the best project award and certificate" will be presented to the outstanding projects and completion certificates to all.

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10. The council reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or appropriate progress is not made. In addition, the Council may designate an officer/an Expert to review the work done.

11. If the GUIDE wishes to leave the Institution where the project is based, the Institute/GUIDE will inform the same to Council and in consultation with Council, evolve steps to ensure the successful completion of the project, before relieving the GUIDE.

12. The Council reserves the right to order verification/audit of accounts by any authorized officer. The bills and accounts shall be kept safe for a **minimum of 5 years**.

13. Unspent money if any should be refunded in the form of DD drawn in favor of **The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, CHENNAI-600 025 payable at CHENNAI.**

14. Investigators must acknowledge the Council in reports and technical/scientific papers if published based on the research work done under the project. Investigators are requested to publish some of the research papers emerging out of the project work in peer-reviewed journals Journal's.

15. If the results of the research are to be legally protected by way of patents/copyrights etc. the results should not be published without action being taken to secure legal protection for the research results.

16. The knowledge generated from the project will be the property of TNSCST and should be properly acknowledged. Transfer to technology generated shall be done in consultation with the Council.

17. The recipient organization shall comply, with such other conditions as may be suggested in the 'guidelines' issued in this regard from time to time.

18. The sanctioned grant should not be utilized for the expenses like travel, photocopy, purchase of books, internet charges and report preparation.

3/8/13

MEMBER SECRETARY

JCT College of Engineering & Technology Pichanur CBE - 105.

PRINCIPAL
JCT College of Engineering and Technology
PICHANUR, COIMBATORE - 641 105.

STUDENT PROJECT PROPOSAL

1. Name of the Student (s)

S.No	Name of the Student	E-Mail ID	Phone No.
1	S.Saranraj	saranraj01072002@gmail.com	9360265915
2	KP.Malavika	malavikakunnathully@gmail.com	7907746559
3	K.Praveen kumar	pkcharleesharp@gmail.com	9894273946

2. Name of the Guide : Babu K

Designation : Assistant Professor

Institutional Address : JCT College of Engineering and Technology
Pichanur, Coimbatore-641105

Phone No. & Mobile No : 9629230655

3. Project Title : E-Umbrella

4. Sector in which your Project proposal is to be Considered : Engineering and Technology

5. Project Details :

INTRODUCTION:

An umbrella is a simple mechanical device stitched using the technique of folding canopy accommodated with wooden or metal ribs, which is held on a plastic, metal or a wooden pole. It is used by human beings to escape from torching sun or rain pour. However, most of us feel frustrated while handling our wet umbrella, and also while missing to carry umbrella at the time of needy. This motivated us to imagine an umbrella, which can be thought of as a boon for every person. It need to perform multiple roles such as power bank, shock generator, torch light, and can be used to charge our electronic gadgets. This project proposal is to realize such an umbrella.

OBJECTIVES:

To design an E-Umbrella with performs multiple roles such as power bank, shock generator, torch light in addition to sunlight/rain protection.

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METHODOLOGY:

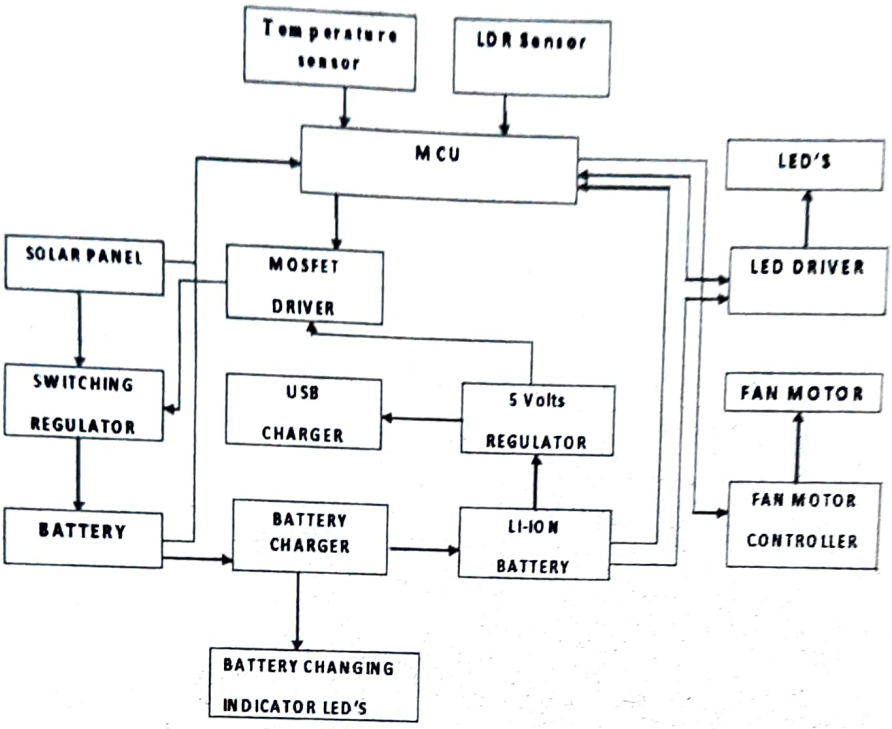

Figure 1 The Block diagram of the proposed system

The prime objective is to provide a dual-purpose umbrella that can be used as a hat umbrella as well as an ordinary umbrella. Hence, it would be a dual-purpose as well as an economical umbrella for working class. It also provides an integrated mobile phone charging facility within the umbrella, so as to use solar power to charge the power bank installed inside the handle. Therefore, the need for carrying additional power bank would be eliminated. A USB mobile charger along with a battery inside the handle is provided at the end of the shaft. The solar panel provides electricity to the fan as well as to the battery. The shaft of the umbrella can be removed and fixed on the head of the user with the help of the adjustable head band. In this stage, electricity from the solar panel is sent to the fan alone. The solar panel can be removed from the umbrella during monsoon and it can be used as a normal umbrella. A high-powered storage battery is also used for this purpose when the solar panels are used for deriving power to run the Smart Umbrella. To increase the efficiency, switching regulator is utilized to maintain maximum power output to the battery charging system and the load. A USB dedicated charging port is also incorporated into the design to allow connectivity in any

environment. This along with multiple LED's, light ups any situation allowing the user to enjoy this product in any situation. When temperature is high, fan will be switch on automatically

WORK PLAN:

S. No.	Work	Deadline
1.	Literature survey	November 2022
2.	Simulation study	December 2022
3.	Hardware construction	January 2023
4.	Debugging and Testing	February 2023
5.	Report writing	March 2023
6.	Journal or Conference submission	April 2023

BUDGET:

S. No.	Name of the item	Approximate Cost in Rupees	Purpose of its usage
1.	NODE MCU	600.00	Controller unit
2.	Solar Panel	4000.00	collect solar energy
3.	Switching Regulator	400.00	Control the switch
4.	DC Fan	700.00	Less energy
5.	DHT11 Sensor	100.00	sense air
6.	LED	400.00	High efficent
7.	USB Charger	600.00	Charging
8.	Temperature Sensor	1200.00	Sense temperature
9.	LDR Sensor	325.00	Sense light
10.	Arduino IDE	1200.00	software
11.	Green roof	250.00	Remove heat
12.	Transformer	200.00	transformation
13.	RTD	800.00	Temperature detect
	Total cost in Rupees	10,795.00	

REFERENCES:

[1][National Institute of Disaster Management (2016) Heat Wave in India:Documentation of State of Telangana and Odisha. Available at: https://nidm.gov.in/PDF/pubs/heat_wave_18.pdf

[2] World Health Organization (2009) Global disease burden from solar ultraviolet radiation. Available at: https://www.who.int/uv/resources/archives/fs305/en/ [Accessed 30 September 2019].

6.Has a similar project been carried out in your college / elsewhere? If so furnish details of the previous project and highlight the improvements suggested in the present one:

No

CERTIFICATE

This is to certify that Mr./Miss._ S.Saranraj , KP.Malavika and K.Praveen kumar is a bonafide final year student of P.G. Science / U.G. Engineering / P.G. Professional courses of our college and it is also certified that two copies of utilization certificate and final report along with seminar paper will be sent to the Council after completion of the project by the end of May 2023.

Signature of the Guide Signature of the HOD Signature of the Principal/

Head of the Institution
(with seal)

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TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

TNSCST

GOVERNMENT OF TAMILNADU

CERTIFICATE

This is to certify that Mr./Ms. S. Saranraj, **JCT College of Engineering and Technology, Pichanur, Coimbatore-641 105** has successfully completed the project titled **"E-Umbrella"** in the Sector ELECTRICAL AND ELECTRONICS ENGINEERING under **STUDENT PROJECT SCHEME** sponsored by the Council during the academic year 2022-2023.

Chennai-600 025
27.10.2023
EEE-0643/2023

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PICHANUR - COIMBATORE - 641 105

Dr. R. SRINIVASAN
Member Secretary

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
STUDENT PROJECT PROPOSAL

1. Name of the Student (s) :

S.No	Name of the Student	E-Mail ID	Phone No.
1	MAHESH KANNAN M	maheshkannan592@gmail.com	8870735467
2	KAMALAKANNAN G	kamalcathy9698@gmail.com	6380474490
3	MAYUR MANGESH GHATKAR M	mayu.ki301@gmail.com	9361036761
4	DHANASEKARAN S	dhanasekaran9023@gmail.com	8870775513

2. Name of the Guide : Dr. S. KAVITHA
   Department / Designation : PETROCHEMICAL ENGINEERING / PROF AND HEAD.
   Institutional Address : JCT COLLEGE OF ENGINEERING AND TECHNOLOGY, COIMBATO
   Phone No. & Mobile No. : 8925148453.
3. Project Title : DEVELOPMENT OF ADVANCED NANOTECH STEEL USING MODERN AND EFFECTIVE NANOTECHNOLOGY.
4. Sector in which your Project proposal is to be Considered : Agricultural/Biology/Environment/Medical/Physical/Social/Veterinary
   Engineering Technology (Chemical Engg/Computer Science/ I.T/ Civil/Mechanical/Mechatronics/Electrical/Electronics/Communication/ Instrumentation)
   (Specify only one sector)
5. Project Details : (write up (max. 3 pages only) should be given for each item including justification for acquiring / fabricating equipment's / apparatus in the budget)
   i. Introduction
   ii. Objectives
   iii. Methodology
   iv. Work Plan
   v. Budget
   vi. Any other details
6. Has a similar project been carried out in your college / elsewhere? If so furnish details of the previous project and highlight the improvements suggested in the present one : No

CERTIFICATE

KAMALAKANNAN.G, MAYUR MANGESH GHATKAR.M,

This is to certify that Mr./Miss. MAHESH KANNAN M, DHANASEKARAN.S is a bonafide final year student of P.G. Science / U.G. Engineering / P.G. Professional courses of our college and it is also certified that two copies of utilization certificate and final report along with seminar paper will be sent to the Council after completion of the project by the end of May 2023.

Signature of the Guide

Signature of the HOD

Dr. S.KAVITHA M.E., Ph.D
Professor & Head
Department of Petrochemical Engineering
JCT College of Engineering and Technology
Pichanur, Coimbatore.

Signature of the Principal/
Head of the Institution
(with seal)

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DEVELOPMENT OF ADVANCED NANOTECH STEEL USING MODERN AND EFFECTIVE NANOTECHNOLOGY

ABSTRACT:

We are introducing a nano structured steel using modern and effective nanotechnogy in the industrial grade equipment (reactor). In this project we use the BOTTOM TO UP APPROACH so that the industrial grade steel can be infused with nanoparticle from the atomic level to surface layer.Being costly doesn't mean that it have the property of high performance and durability, which is the current concern of every industry now-a-days. therefore we are going to replace the industrial grade steel with the nano structured steel at major downstream refinery so that they can have extreme strength, more corrosive resistance, reactive repellent nanostructure stills. It also act as an barrier between the extreme heat ingrain reactor and the side the plant sites which has been occupied by the engineers.

INTRODUCTION:

Nanotechnology is the emerging area of the research which has the potential in replacement of conventional micron technology and gives size dependent properties of the functional material.

When the dimension of the material is reduced from a large size, the properties remain as the same as the first, then small change occur, until finally, when the size drop below 100nm, dramatic change in properties occurs.

If only one dimension of the three-dimensional nanostructure is of nanoscale, the structure is referred as quantum well; if two-dimension are of nanoscale, the structure is referred as quantum wire; if all dimension are in nanostructure then it is referred as

OBJECTIVES :

- To find the yield strength of the stainless steel
- To prepare a nanomaterial steel
- To find the strength of nano-steel prepared
- To introduce nano material in a reactor

METHODOLOGY:

BOTTOM-UP APPROACH:

Bottom-up, or self-assembly, approaches to nanofabrication use chemical or physical forces operating at the nanoscale to assemble basic units into larger structures. As component size decreases in nanofabrication, bottom-up approaches provide an increasingly important complement to top-down techniques. Inspiration for bottom-up approaches comes from biological systems, where nature has harnessed chemical forces to create essentially all the structures needed by life. Researchers hope to replicate nature's ability to produce small clusters of specific atoms, which can then self-assemble into more-elaborate structures.

STRUCTURE OF AN INVERTED OR REVERSE MICELLE:

A number of bottom-up approaches have been developed for producing nanoparticles, ranging from condensation of atomic vapours on surfaces to coalescence of atoms in liquids. For example, liquid-phase techniques based on inverse micelles (globules of lipid molecules floating in a nonaqueous solution in which their polar, or hydrophilic, ends point inward to form a hollow core, as

shown in the figure) have been developed to produce size-selected nanoparticles of semiconductor, magnetic, and other materials. An example of self-assembly that achieves a limited degree of control over both formation and organization is the growth of quantum dots. Indium gallium arsenide (InGaAs) dots can be formed by growing thin layers of InGaAs on GaAs in such a manner that repulsive forces caused by compressive strain in the InGaAs layer results in the formation of isolated quantum dots. After the growth of multiple layer pairs, a fairly uniform spacing of the dots can be achieved. Another example of self-assembly of an intricate structure is the formation of carbon nanotubes under the right set of chemical and temperature conditions.

PROPERTIES:

- Self healing
- High performance
- Extreme strength
- Easier to yield
- Low carbon steel
- Corrosive resistive
- Energy absorbing
- Polymeric coating
- Shape memory

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WORK PLAN:

Time period	Work plan
0-15 days	Analysis of industrial grade steel
0.5-1.5 months	Preparation pf nano structured steel
1.5-2months	Analysis the properties of nano structured steel
02-04 months	Modification of generic properties
04-05 months	On Field assesment
05-06months	Validation and report preparation

BUDGET:

Serial no:	Cost
Industrial grade steel	2600
preparation	2000
Testing instruments	2500
Documentation	1000
Travel	2400
Total	10400

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GOVERNMENT OF TAMILNADU

CERTIFICATE

This is to certify that **Mr./Ms. S. Dhanasekaran, JCT College of Engineering and Technology, Pichanur, Coimbatore - 641 105** has successfully completed the project titled **"Development of advanced nanotech steel using modern and effective nanotechnology"** in the Sector CHEMICAL ENGINEERING under STUDENT PROJECT SCHEME sponsored by the Council during the academic year 2022-2023.

Chennai-600 025
27.10.2023
CHE-066/2023

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Pichanur CBE - 105.

Dr. R. SRINIVASAN
Member Secretary

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

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CERTIFICATE

This is to certify that **Mr./Ms. M. Mahesh Kannan, JCT College of Engineering and Technology, Pichanur, Coimbatore - 641 105** has successfully completed the project titled **"Development of advanced nanotech steel using modern and effective nanotechnology"** in the Sector CHEMICAL ENGINEERING under **STUDENT PROJECT SCHEME** sponsored by the Council during the academic year 2022-2023.

Chennai-600 025
27.10.2023
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Member Secretary