



GOVERNMENT OF KARNATAKA
VISION GROUP ON SCIENCE AND TECHNOLOGY
Karnataka Science and Technology Promotion Society
Department of Electronics, Information Technology, Biotechnology and
Science & Technology

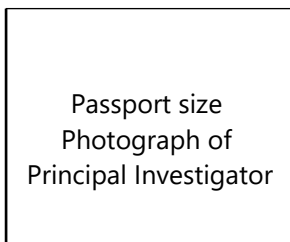
Application No.	VRN/003022/21-22
-----------------	-------------------------

A. GENERAL INFORMATION

1	Scheme Applied (CESEM, CISEE, K-FIST L1 & L2 and RGS/F)	K-FIST L1 : Karnataka Fund for Infrastructure Strengthening in Science & Technology (K-FIST L1)
2	About the project	
a)	Title of the project	Biodegradable Nano based cutting fluid for mild steel drilling
b)	Subject area as per instruction (Please refer serial No.26 under Annexure-II)	Mechanical Engineering
	Subject category area	cutting fluids for machining
3	Details of Principal Investigator	
a)	Name	Viraja Deshpande
b)	Date of Birth & Gender	13/04/1989 (Female)
c)	Age	32
d)	Qualification	M.tech
e)	Designation	Research Scholar
f)	Department	Mechanical Engineering
g)	Years of teaching/research experience	Teaching : 2.00 ; Research : 3.00
h)	Email ID	virajadeshpande89@gmail.com
i)	Cell Number / Alternate Cell Number	9481432959 /
j)	Residential Address	#86, Janani, Y.V.Annaiah Road, Yelachenahalli, Kanakapura main road, bengaluru-78
k)	Ph.D Degree holder	No
l)	Alternate Email ID	virajadeshpande1989@kssem.edu.in
4	Details of Co-Principal Investigator	
a)	Name	Dr. Jyothi P.N
b)	Date of Birth & Gender	27/10/1977 , Female
c)	Age	44
d)	Qualification	Ph.d
e)	Designation	Professor
f)	Department	mechanical Engineering
g)	Years of teaching/research experience	Teaching : 20.00 ; Research : 9.00
h)	Email ID	jyothi.p.n@kssem.edu.in
i)	Cell Number / Alternate Cell No	9663080471 /
j)	Residential Address	K.S.School of engineering and management, Mallasandra, off kanakapura road, Bangalore-109
k)	Alternate Email ID	
5	Details of the Head of the Department	
a)	Name of the Head of the Department	Dr.Balaji B.
b)	Email ID	hod.mech@kssem.edu.in
c)	Cell Number	9845496309

6	Details of the Institution		
a)	Name of the College/Institution with address	K.S. SCHOOL OF ENGINEERING AND MANAGEMENT Address : #15/1, MALLASANDRA, OFF KANAKAPURA ROAD , BENGALURU , Bangalore North , Bangalore - 560063	
b)	Type of the Institution (as per the instruction in SI.No.29)	Private Institution	
c)	Accredited year by NAAC/NBA	2021	
d)	Name of the Head of the Institution	Dr. K. Rama Narasimha	
e)	Designation of the Head of the Institution	Principal/director	
f)	Phone Number (Landline) and college website	080-28425012 Website : www.kssem.edu.in	
g)	Cell Number	9606055906	
h)	Email ID	principal@kssem.edu.in	
i)	Student strength		
Sno.	Department	UG	PG
1	Mechanical Engineering	150	0
	Total	150	0
	Whether the project involves collaboration with research institution / industry? If yes , please enclose a letter to this effect	No	
7	If your proposal is selected,		
a)	Cheque/DD to be written in favour of	Principal, KSSEM college, Bengaluru	
8	If, amount to be credited to your bank		
a)	Name of the Account holder	Kammavari Sangham school of Engineering and Management	
b)	Name of the Bank	Axis Bank	
c)	IFS Code	UTIB0001513	
d)	SB A/c Number	SB :911010055761116	
e)	Address of the Bank	JP Nagar, 6th phase Branch, No 75-A,Ganapathy Raja Enclave, 100 Ft ring road, Bangalore -78	

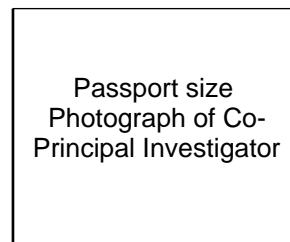
- a) We are aware of all instructions and directions indicated in Guidelines, Terms and Conditions (GTC) present in GRD – Book of VGST.
- b) We undertake to utilize the VGST grant by strictly adhering to the GTC of VGST.
- c) We undertake the responsibility of purchasing/procuring the equipment only within the VGST approved cost/price.
- d) If we purchase the equipment more than the VGST approved cost the college management will meet the extra cost.
- e) In case of transfer/ retirement/ deputation/ termination/ change of work place from this Grantee Institution, we shall obtain NOC from VGST office by suggesting another responsible & suitable faculty member as PI who belongs to the grantee Dept. of this College/ Institution.
- f) We will procure the equipment within the allowed cost as approved by VGST in the Budget Estimate (PART - A of GRD).
- g) We will not procure any equipment which is not approved by VGST. If such procurement of Equipment/Item is made without the VGST's approval, the College Management/ Grantee Institution will bear the cost of the equipment/Item.
- h) While procuring the equipment, Purchase Committee will follow the procurement procedure as per the KTPP Act 1999 & 2000.
- i) We will obtain the VGST approval of the Budget Estimate (both Non-recurring & Recurring) indicated in PART-A of GRD only once in a Financial Year (FY) & we will not submit for the revised Budget Estimate. We will submit to VGST all the necessary Purchase documents (PART-B) within the 4 months period from the date of issue of grant. We will submit quarterly progress report and consolidated report at the end of the project.



(Viraja Deshpande)

Signature of the
Principal Investigator

Signature of Head of
the Department
(with seal)



(Dr. Jyothi P.N)

Signature of Co-
Principal Investigator

Signature of the Head
of the Institution
(with seal)

Attached documents

S No.	Document Name	File Name	Document Description
1	Others	graphs.docx	Graphs of properties
2	Others	Methodology.docx	methodology Chart
3	Others	properties.docx	properties chart for oils
4	Others	work plan.docx	work plan Chart

B. DETAILS OF THE PROJECT PROPOSAL

1. Title of the Project Proposal	Bio-degradable Nano based cutting fluid for mild steel drilling
2. Project Keywords	cutting fluids, mild steel, drilling, Bio-oils
3. Objectives of the proposal (Not more than six points)	<ol style="list-style-type: none"> 1. selection of bio oils based on physical and chemical properties. 2.further study will be carried out on selected bio-oils based on the properties. 3.modification of bio-oils as water based emulsified cutting fluids for drilling operation 4. comparative study on operating parameters using Bio-oils, emulsified Bio-oils and Petroleum oil as cutting fluid 5.optimization of results and comparision of those results with nano Based Bio-oils as cutting fluids 6.Analysis of results using Numerical Analysis for validation
4. Background of the project	<p>India is called as land of agriculture. The vegetable seeds are used for different purposes like food, fuel, medicines etc. The oils extracted from thses seeds are called bio oils. These bio oils are catagarised as edible oils and non edible oils.some of the edible oils i.e oils used in cooking are ground nut oil, sunflower oil, ricebran oil, coconut oil etc. Some of the non edible i.e not used for cooking are Neem oil, mahua oil, Pongamia oil, aloe vera oil etc</p> <p>From past centuries, many research work were carried out to use these oils as bio fuels, bio medicines and also as bio cutting fluids.It has been also observed that the properties of vegetable oils showed better results to use them as bio fuels and bio cutting fluids. Different researchers has worked on physical and chemical properties of vegetable oils grown in different regions of the world. based on the Literature review and to replace petroleum based cutting fluids by Bio-oils, an investigation will be carried out on machining parameters. because petroleum oils are hazardous to environment and also on workers.</p>
5. Methodology (Graphs, designs, charts, may be attached as a separate file in the list of attachments by selecting Document Type 'Others')	attached Methodology
6. Milestones with time schedule & work plan	attached work plan
7. List of equipment available in your Institute/College for the project implementation	<ol style="list-style-type: none"> 1. surface roughness tester 2.saybolt viscometer 3.drill tool dynamometer 4.profile projector 5.screw guage
8. List of equipment required for 1st instalment & 2nd instalment for Project Implementation	<ol style="list-style-type: none"> 1.pyrometer 2.Licence for MINITAB Software to carry out DOE 3.DEFORM software for analysis
9. Relevance, importance & application of the project	<p>Cutting fluidcs are required to reduce Heat generation between tool, workpiece and chips during machining. Petroleum based cutting fluids leads to Health Hazards of operator and also leads to economic pollution. so vegetable based cutting fluids will help to overcome these problems. The nano based vegetable based cutting fluids can be applied in machining industries.</p>
10. Novelty/Uniqueness of the project	<p>In recent Years many research works were carried out on Vegetable based Cutting fluids in Machining operations like Turning, Milling, Grinding and drilling. But use of edible oils will impart on Food industry competition. so Non-Edible nano based vegetable oils can be used as cutting fluids. There are very less research works are been carried out on Non Edible oils in deep DrillingSo in present research, Non-Edible nano based bio-Oils are been used as cutting fluid for deep hole drilling</p>
11. Whether this project leads to innovations and patents, if yes explain	Yes, This project can help industries to replace Petroleum based cutting fluids with non edible nano based vegetable based cutting fluids which are environmental friendly
12. Whether this project leads to a Startup, if yes explain	NA
13. Whether this project leads to cost effective Technology, if yes explain	NA
14. Highlight reasons in FIVE sentences or less, what is special, unique or novel in your project that makes it an attractive proposition	Non-Edible oils are being used as Cutting fluid for drilling operation. Nano particle solution in Bio oils which is used as cutting fluid and results are analyzed.

15. Deliverables of the project (Precise and in bullet form)	1.A good Bio-oil as cutting fluid for drilling operation on components Used in Industrial applications. 2.Quality enhancement of drilled components. 3.Reduction in machining cost 4.Future Scope for other Researchers.
16. Please state willingness of your Institute to give partial financial support to this proposal. If yes, state percentage of the total cost that will be supported by your Institute. Include a signed letter from the head of the institute assuring the said support	NA
Information about Principal Investigator, Research track record, Innovation in the proposed work	
a) List of Publications (For the last 5 years) i) Journal Publications listed @ SCImago Journal Rank (Rating . Q1 OR Q2 OR Q3 OR Q4). Specify rating by referring the website: https://www.scimagojr.com/journalsearch.php	
	NA
ii) Journal publications -Not listed in SCImago Journal rating rank	
	Deshpande Viraja, jyothi P.N 'Experiment to determine Specific heat of oils', Journal of Mechanical and Energy Engineering, ISSN (Print): 2544-0780, Volume: 5(45), February 2021.
iii) Conference Presentations	
iv) Google Impact factor of journal	NA
b) Patent(s) filed/granted with details	NA
c) Give details of commercialization status for the granted patents	NA
d) Books published/chapter contributed with details	NA
e) Industrial consultation (given/undertaken) provide details (past 5 years)	NA
f) Other details if any You may state willingness of your Institute to financially support this proposal. If yes, what percentage of the cost will be supported by your institute. Include a signed letter from the head of the institute reflecting the same.	NA
g) Highlight reasons in FIVE sentences, why your project must be chosen over many other proposals received by VGST?	1.Eases its availability as cutting fluids. 2.Contributes to pollution reduction. 3.Acts as rust preventive coating. 4.Less irritant to operators. 5.A much Economical, Eco friendly and Non Hazardous cutting Fluid is introduced to the Machininng Industries.
h) Have you tested your concept/innovation? If yes indicate supporting results that makes you to believe in the succusses of the proposal	yes. The Physical properties like Viscosity, specific heat, density, Flash point and Fire point of Bio-oils and petroleum oil are determined. The Results are attached. From the results. it is seen that Bio oils showed better results Compared to petroleum based cutting fluids. some trial experiments were also carried out and better results were observed for operating parameters. therefore these results made to believe in the success of the proposal.
Information about Co-Principal Investigator, Research track record, Innovation in the proposed work	
a) List of Publications (For the last 5 years) i) Journal Publications listed @ SCImago Journal Rank (Rating . Q1 OR Q2 OR Q3 OR Q4). Specify rating by referring the website: https://www.scimagojr.com/journalsearch.php	

	lyothi.P.N Rao A. Shailesh. M. C. Jagatn & K. Channakeshavalu. Influence of Refiner in ZA-12 Alloys During Centrifugal Casting Process: " JC4, Print ISSN, Vol. 66, No. 5, 2014.pp 720-725. SCImago Journal Rank Rating: Q1
ii) Journal publications -Not listed in SCImago Journal rating rank	
	Jyothi P N, Jagath M.C, Channakeshavalu K, "Influence of Aluminum on melt flow behavior of ZA alloys processed through Centrifugal Casting Process", Advanced Materials Manufacturing & Characterization Vol 6 Issue 2, ISSN 2347-1891, Sept 2015.PP.5-11
	Jyothi P N, et al, "Comparison of Mechanical Properties of Ai-55 Alloy Reinforced with Cow dung ash and Rice husk ash". International Journal of Latest Research in Engineering and Technology, ISSn:2454-5031. volume 1, Issue 4,September 2015,PP 55-58.
	PN Jyothi, AS Rao. et.al "The Effect of Increase in Aluminum Content: on Fluidity of ZA Alloys Processed by Centrifugal Casting, world Academy of Science. Engineering and Technology. international! Journal of Indonasia and ManufacturingEngineering.volume-1, issue-4, 20
iii) Conference Presentations	
	P.N. Jyothi, Dr. A Shailesh Rao. Dr. M.C. Jagath, K. Channakeshavalu. "Influence of Refiner Aluminum Titanium Boride on the ZA alloys Processed through Centrifugal Casting" ASME 2013 International Mechanical Engineering Congress and Exposition, IMECE2013, November 15-21, 2013, San Diego, California. USA
	P.N. Jyothi, et o, "influence of non-edible vegetable-based oil as cutting fluid on chip, surface roughness and cutting force during drilling operation of Mild Steel", Advances in Materials and Manufacturing Applications (IConAMMA 2016" 14th - 16th July. 2016, Amrita Vishwa Vidyapeetham University, Bangalore.
	PN Jyothi, et al, "Effect of Vegetable Based Cutting Fluids on Chip Formation and Surface Roughness During Tuning Operation of Mild Steel", International Conference on Applied Engineering Sciences and Management, K S School of Engineering and Management, Bangalore 12th Oct 2018
ii) Journal publications -Not listed in SCImago Journal rating rank	NA
b) Patent(s) filed/granted with details	NA
c) Give details of commercialization status for the granted patents	NA
d) Books published/chapter contributed with details	NA
e) Industrial consultation (given/undertaken) provide details (past 5 years)	NA
Details Of Industrial Collaboration	

Signature of PI and Co-PI

**Signature from Industry/Collaborative
Institute**

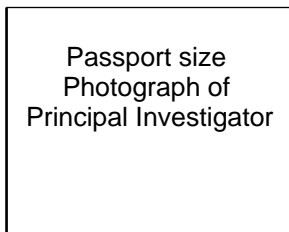
1)

2)

C. UNDERTAKING FROM THE PRINCIPAL INVESTIGATOR AND CO-PRINCIPAL INVESTIGATOR

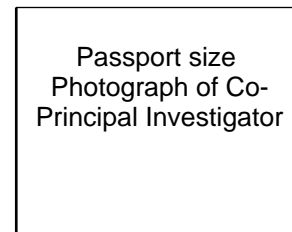
Project Title:	Biodegradable Nano based cutting fluid for mild steel drilling
VGST Name:	K-FIST L1 : Karnataka Fund for Infrastructure Strengthening in Science & Technology (K-FIST L1)

- 1) We have carefully read the terms and conditions of VGST Scheme and we agree to abide by them and complete the project by fulfilling all the formalities.
- 2) We have not submitted or obtained any financial support for this or a similar project proposal.
- 3) We shall ensure that the equipment shown in the project proposal which will be procured under this project are not available in our institution/college.
- 4) The equipment procured under VGST Scheme will be made available to other faculty and students, as needed by them.



(Viraja Deshpande)

Name and Signature of
the Principal
Investigator



(Dr. Jyothi P.N)

Name and Signature of
Co-Principal
Investigator

Date