Fabrication and Mechanical characterization of Nano and hybrid aluminum based metal matrix composites

Reference No. : 182022004567

Saved By : Dr. I.S.N.V.R.PRASANTH SNVR PRASANTH

Saved Date : 06-Apr-2022

PROPOSAL DETAILS

Dr. I.S.N.V.R.PRASANTH SNVR PRASANTH

prasanth5109@gmail.com

Associate Professor (Mechanical Engineering)

Malla Reddy Engineering College

Maisammaguda, dhulapally (post via. kompally), secunderabad, rangareddy dt, Hyderabad, Telangana-500100

Technical Details :

Scheme :	Core Research Grant		
Research Area :	Mechanical & Manufacturing Engineering & Robotics (Engineering Sciences)		
Duration :	36 Months	**Contact No :**	+919963244299
Date of Birth :	10-Dec-1977		
Nationality :	INDIAN	**Total Cost (INR) :**	34,54,756

Is PI from National Laboratory/Research Institution ? No

Project Summary :

With intensive research in the field of material science and engineering many new generation materials have come into vogue. One such development among new generation materials is hybrid metal matrix composites. To overcome the flaws in traditional metals like higher strength, toughness, stiffness and lower densities metal matrix composites have been developed. These new generation materials are in contrast with the conventional monolithic materials with regards to strength, toughness, stiffness and lower densities. The main distinction between metal matrix composites and conventional alloys lies in the secondary phase. In alloys it occurs due to eutectic or eutectic reactions while in metal matrix composites it is formed as a result of adding matrix material. The usage of the MM C's was restricted due to its complexity in manufacturing techniques and high cost reinforcements. Due to the availability of extensive range of discontinuous reinforcements in the recent years, it has drawn attention in almost all fields which led to the easy fabricated and low cost effective techniques. Extensive research is carried out to develop light weight and meager price matrix materials such as aluminium and magnesium in place of high cost matrix materials such as titanium, nickel steel zinc, lead, copper etc. Due to the various properties namely low density, machinability, durability, low weight/high strength ratio, exceptional corrosion abrasion and wear resistance, high thermal and electrical conductivity, when compared among the various matrix materials aluminium matrix system is mostly preferred.

Objectives :

• In this work mechanical characterization of Mg–Al carbon nano tube mixtures composites have been studied to provide knowledge of fabrication for CNTs reinforced bimetallic Mg–Al fabrication, mechanical behavior and understanding of milling properties as well.To produce the mass scale of Mg–Al/CNTs composites, attention should be paid on the homogeneous dispersion method of CNTs in Mg or Al matrix and effective bonding technique between the matrix and CNTs. To better understand the strengthening mechanisms and developed high performance, there is still a vast scope of work could be conducted on theoretical studies of CNTs reinforced Mg and Al alloys, involving the relationships between processing parameters, micro and nano-structures, and multi-scale mechanical modeling and simulation.

Keywords :
Carbon nano tubes, Mg–Al bimetallic matrix, fabrication method,

Expected Output and Outcome of the proposal :

In this work mechanical characterization of Mg–Al carbon nano tube mixtures composites have been studied to provide knowledge of fabrication for CNTs reinforced bimetallic Mg–Al fabrication, mechanical behavior and understanding the properties as well. The investigations on different series of Mg and Al alloys other than pure metals that will create the potential industrial applications.

Any other relevant information:

This proposal work is best suitable for innovative thoughts in manufacturing engineering

Suitability of the proposed work in major national initiatives of the Government:

Swachh Bharat

Theme of Proposed Work:

Manufacturing

Collaboration Details for last 5 Years :

Planned Collaboration for the proposed work with any foreign scientist/ institution ? **No**

SNo.	CO-PI Details
1	 **A Raveendra** akununuraveendra@mrec.ac.in Professor(Mechanical Engineering) **Malla Reddy Engineering College** Maisammaguda, Dhulapally (Post via. Kompally), Secunderabad, Rangareddy Dt, TELANGANA, HYDERABAD D.O.B : 17 Dec, 1970

1. Origin of the Proposal:

With intensive research in the field of material science and engineering many new generation materials have come into vogue. One such development among new generation materials is hybrid metal matrix composites. To overcome the flaws in traditional metals like higher strength, toughness, stiffness and lower densities metal matrix composites have been developed. These new generation materials are in contrast with the conventional monolithic materials with regards to strength, toughness, stiffness and lower densities. The main distinction between metal matrix composites and conventional alloys lies in the secondary phase. In alloys it occurs due to eutectic or eutectoid reactions while in metal matrix composites it is formed as a result of adding matrix material. The usage of the MMC's was restricted due to its complexity in manufacturing techniques and high cost reinforcements.

Due to the availability of extensive range of discontinuous reinforcements in the recent years, it has drawn attention in almost all fields which led to the easy fabricated and low cost effective techniques. Extensive research is carried out to develop light weight and meager price matrix materials such as aluminium and magnesium in place of high cost matrix materials such as titanium, nickel steel zinc, lead, copper etc. Due to the various properties namely low density, machinability, durability, low weight/high strength ratio, exceptional corrosion abrasion and wear resistance, high thermal and electrical conductivity, when compared among the various matrix materials aluminium matrix system is mostly preferred.

2. Review of status of Research and Development in the subject

International Status:

Material development needs continuous progress to satisfy the expansion of new technology and versatile use of material [1]. A pure and single material hardly satisfies the increasing demands of improved mechanical, chemical, electrical properties [2]. The lightweight composites are becoming essential for high-speed trains, automotive vehicles, structures, and prominently in space applications [3–5].

High strength metallic composites have been used for the last few decades to come across the solution [6].

The most significant metals and alloying elements on earth are Al, Mg, Ni, W, Sn, Cu, Ag, Ti and their various ranges of blends for different applications [7, 8]. The major shortcomings of these composite combinations are strength to weight ratio. Some alloys are very difficult to manufacture and even costly. Few metals are rare and barely imaginable to apply in general engineering problems.

Thus, lightweight and low-cost alloys or composites are demands of the future without any sacrifice of mechanical prospects. A flexible, easier and fast manufacturing or developing process must be available to produce such light-weight composite with superb mechanical properties. To overcome the problem, composites of metal, fiber, polymer, plastic has served a lot till dated. However, the coolest thing ever is the development of carbon nanotubes (CNTs) [9] and its features and advantages [10] as a reinforcing element to combine it to form reinforced composite with other elements.

National Status:

Mechanical milling, a solid state high-energy ball milling process where particles are repeatedly fractured and welded [11], has beenused successfully to disperse uniformly a

variety of reinforcements within Al matrix [12–14]. Furthermore, the mechanical properties of a CNT/Al composite made by mechanical milling would be further improved by Al grain refinement up to the nanoscale due to the intensive plastic deformation and by the incorporation and disper- sion of the oxide layer initially present on the surface of Al powders [11]. However, different studies show that CNTs can be modified when milled alone, going from simple shortening [15–19] to amor- phisation [13]. Also, studies of CNT milling with metals, such asiron [14] or magnesium for hydrogen storage [15,16] indicate accelerated CNT damages. Only few research groups have investi- gated the dispersion of CNTs in an Al matrix by mechanical milling[17–19], and their investigation of the effect of milling on the nanotube structure has been very limited.

Importance of the proposed project in the context of current status

In this work mechanical characterization of milled Mg–Al carbon nano tube mixtures composites have been studied to provide knowledge of fabrication for CNTs reinforced bimetallic Mg–Al fabrication, mechanical behavior and understanding of milling properties as well. The investigations on different series of Mg and Al alloys other than pure metals that will create the potential industrial applications.

To produce the mass scale of Mg–Al/CNTs composites, attention should be paid on the homogeneous dispersion method of CNTs in Mg or Al matrix and effective bonding technique between the matrix and CNTs. Special attention should be paid to minimize the CNTs damage during solid state processing. To better understand the strengthening mechanisms and developed high performance, there is still a vast scope of work could be conducted on theoretical studies of CNTs reinforced Mg and Al alloys, involving the relationships between processing parameters,

micro and nano-structures, and multi-scale mechanical modeling and simulation.

Usually various plating's are in use previously for enhancement of surface properties, but it has shown more adverse effect on environment and health issues because of emission of harmful gases. So, to overcome those situations modern techniques such as thermal spray process has been used recently, among the various thermal spraying coating techniques,

Due to the presence of various properties like low density, machinability, durability, low weight-high strength ratio, exceptional corrosion abrasion and wear resistance of Mg–Al carbon nano tube composites are predominantly used for various applications. Researchers and industrialists has found that, among the various discontinuous dispersions reinforcements like rice husk ash (RHA) has gained lot of attraction because of its working conditions even for low densities as well as it is of low cost when compared to the other reinforcements.

If the project is location specific, basis for selection of location be highlighted:

N.A

3. Work Plan:

Methodology:

1. Selection of materials
2. Fabrication of nano and Al-Mg composites
3. Mechanical characterization of nano and Al-Mg composites

Time Schedule of activities giving milestones through BAR diagram.

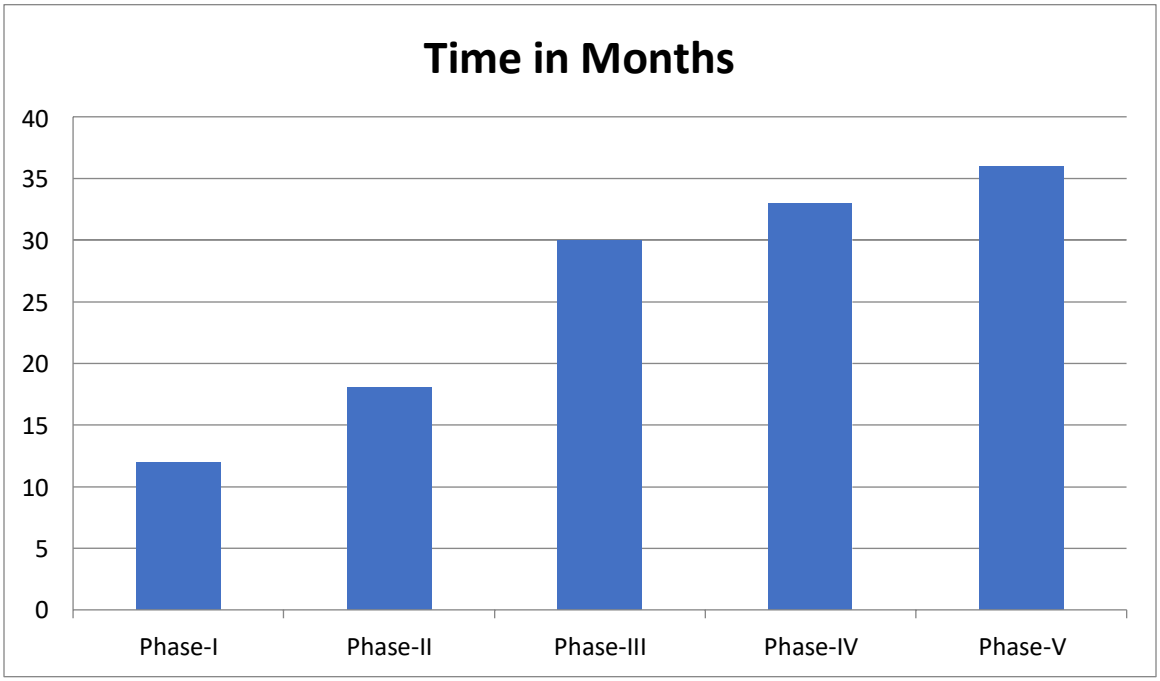
Phase 1: Purchase of equipments, raw material powders

Phase II: Fabrication of nano and Al-Mg hybrid composites checking for stability, evaluating properties

Phase III: Performing initial experimentation at varying compositions, calculation of optimum coating thickness value for maximum damping behavior.

Phase IV: Optimization of wire EDM parameters for machining of fabricated composites to achieve maximum damping value

Phase V: Determining maximum damping value of coated and non-coated fabricated hybrid composites using dynamic mechanical analyzer.



Suggested Plan of action for utilization of research outcome expected from the project.

• Research outcome from the project will be published in international journals which will be accessed by industrialist as well as academicians.

• Patent may be filed on fabricated coated hybrid composites.

• Research outcomes will be discussed in international conferences wherein there is interaction of academicians and industrialist. This may help the industrialist to apply the techniques in their concerned areas.

Environmental impact assessment and risk analysis.

Environmental impact will be analyzed in the present proposal by measuring energy consumed in stir casting environment. This will help to evaluate amount of carbon emitted to the environment. Parameters which decrease power consumption will be studied and suggestions will be provided on how to minimize energy consumption.

4 Expertise:

Expertise available with the investigators in executing the project:

- Dr. I.S.N.V.R.Prasanth Associate Professor in Mechanical Engineering with a proven Academic and Administration track record with over 15 years of experience. He is very much enthusiastic towards research activities. He has published 2 Free SCI & 6 Free Scopus papers, 1 book chapter, 2 patents and around 25 other reputed publication papers. Under his able guidance 30 projects have been completed in UG level, and 5 projects in PG level.
- Dr. A.Raveendra Professor & Principal in Mechanical Engineering with a proven Academic and Administration track record with over 21 years of experience. • Worked as Principal over 2 Years • UGC Coordinator • Worked as HOD over 18 Years • Published 2 8 publications in peer reviewed journals • 02 patents received • Conducted Workshops, FDP, National and International Conferences. • Handling MOU's from Eminent Organizations for training students and improves skills. My Doctorate Degree, my qualifications, my experience and my attitude further bolster the Institute

Preliminary results to implement the work:

The investigator has done some preliminary work on fabrication of nano and Al-Mg hybrid composites. So, the investigator has knowledge of different methods of fictionalization, different methods to be used for evaluation of damping behavior. But as nano and Al-Mg

hybrid composites are handled for the first time, so it requires a thorough investigation from scratch.

Summary of roles/responsibilities for all Investigators:

S. No.	Name of the Investigators	Roles/Responsibilities
1.	Dr. I.S.N.V.R.Prasanth	PI
2.	Dr. A.Raveendra	Co-PI

Key publications published by the Investigators pertaining to the theme of the proposal during the last 5 years

- I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, Chandra Mouli Badiganti. ‘‘Influence of Milling Process Parameters and Significance of Tools to Improve the Surface Quality of GFRP Composites’’. Machining Science and Technology. Vol.26, No. 1, (2022) 120-136. **(Taylor & Francis Ltd).**

- I.S.N.V.R.Prasanth, S.Nikitha, R.Pulsingh, M.Sampath, Shaik Bazee and Chandra Mouli Badiganti. ‘‘Influence of Milling Process Parameters on Machined Surface Quality of Carbon Fibre Reinforced Polymer (CFRP) Composites Using Taguchi Analysis and Grey Relational Analysis’’. International Journal of Integrated Engineering. VOL.13 NO. 6 (2021) 76-88.

- Chandra Mouli Badiganti, K Kishor Kumar, Shiva Leelapali, I.S.N.V.R.Prasanth. ‘‘Effect of Temperature on Free Vibration of Functionally Graded Plate with Cut out’’. International Journal of Integrated Engineering. VOL.13 NO. 1 (2021) 28-38.
- I.S.N.V.R.Prasanth, D.V.Ravishankar, Manzoor Hussain, Vinod Sharma, Sunil Pathak Chandra and Mouli Badiganti. ‘‘Investigations on Performance characteristics of GFRP Composites in Milling’’. International Journal of Advanced Manufacturing Technology, 2018, 99(5-8), pp.1351–1360. Doi:10.1007/s00170-018-2544-2. **(Springer).**
- I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain. ‘‘Comparative Evaluation

on Surface Quality of GFRP Composites by Different End mill Tools''. International Journal of Machining and Machinability of Materials, 2017, 19(5), pp.483-504. DOI: 10.1504/IJMMM.2017.087622 .

- I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain. ''Analysis of Milling Process Parameters and Their Influence on GFRP Composites''. International Journal of Engineering TRANSACTIONS A: Basics, 2017, 30(7), pp.1074-1080. Doi: 10.5829/ije.2017.30.07a.17.
- I.S.N.V.R.Prasanth, D.V.Ravishankar, M.ManzoorHussain, D.Ramanareddy ''Performances of different mill cutters in machining of GFRP Composite Laminates". (ICMPC_2016) Materials Today: Proceedings, 2017, 4(2), pp. 2800-2805.
- I.S.N.V.R.Prasanth, D.V. Ravishankar, M.Manzoor Hussain, ''Critical Analysis in Milling of GFRP Composites by Various End Mill Tools''. (ICAFM_2017) Materials Today: Proceedings, 2018, 5(6), pp.14607–14617.

Bibliography

Dr I.S.N.V.R.Prasanth is working as Associate Professor in Department of Mechanical Engineering, Malla Reddy Engineering College, Secunderabad, India. He has done her Ph.D from JNTU University, Hyderabad. She has published 25 papers in International journals and presented in 8 international and national conferences. Under his able guidance 30 projects have been completed in UG level, and 5 projects in PG level.

Dr. A.Raveendra is working as Professor in department of Mechanical Engineering in Malla Reddy Engineering College, Secunderabad, India. He has done her Ph.D from JNTU University, Hyderabad. He has published 27 papers in International journals and presented in 18 international and national conferences. He has guided many B.Tech and M.Tech students in their projects.

5. List of Projects submitted/implemented by the Investigators
NA

6. List of facilities being extended by parent institution(s) for the project implementation.

Infrastructural Facilities

Sr. No.	**Infrastructural Facility**	**Yes/No/ Not requiredFull or sharing basis**
1.	Workshop Facility	YES
2.	Water & Electricity	YES
3.	Laboratory Space/ Furniture	YES
4.	Power Generator	YES
5.	AC Room or AC	YES
6.	Telecommunication including e-mail & fax	YES
7.	Transportation	YES
8.	Administrative/ Secretarial support	YES
9.	Information facilities like Internet/Library	YES
10.	Computational facilities	YES
11.	Animal/Glass House	Not Required
12.	Any other special facility being provided	-

Equipment available with the institution/ group/Department

Equipment available with	**Generic Name of Equipment**	**Model, Make & year of purchase**	**Remarks including accessories available and current usage of equipment**
PI & his group	-	-	-

PI's Department Department of Mechanical Engineering MallaReddy Engineering College (Autonomous)	Universal Testing Machine	UTM-20,05/08/2004	Currently used in Laboratory for UG, PG and Research works
	Hardness Testing Machine	RAB-250,05/08/2004	Currently used in Laboratory for UG, PG and Research works

7 Name and address of experts/ institution interested in the subject /outcome of the project.

Budget Details

Institution wise Budget Breakup :

Budget Head	Malla Reddy Engineering College	Total
Manpower	8,10,000	**8,10,000**
Consumables	3,00,000	**3,00,000**
Travel	90,000	**90,000**
Equipment	18,79,756	**18,79,756**
Contingencies	3,00,000	**3,00,000**
Overhead	75,000	**75,000**
Total	**34,54,756**	**34,54,756**

Institute Name : ***Malla Reddy Engineering College***

Year Wise Budget Summary (Amount in INR) :

Budget Head	Year-1	Year-2	Year-3	Total
Manpower	2,70,000	2,70,000	2,70,000	**8,10,000**
Consumables	1,50,000	1,00,000	50,000	**3,00,000**
Travel	30,000	30,000	30,000	**90,000**
Equipments	18,79,756	0	0	**18,79,756**
Contingencies	1,25,000	1,00,000	75,000	**3,00,000**
Overhead	25,000	25,000	25,000	**75,000**
Grand Total	**24,79,756**	**5,25,000**	**4,50,000**	**34,54,756**

Manpower Budget Detail(Amount in INR) :

Designation	Year-1	Year-2	Year-3	Total
Junior Research Fellow *For conducting experimental tests and analysis*	2,70,000	2,70,000	2,70,000	**8,10,000**

Consumable Budget Detail (Amount in INR) :

Justification	Year-1	Year-2	Year-3	Total
Aluminum powder, Magnesium powder, carbon nano powder etc.,	1,50,000	1,00,000	50,000	**3,00,000**

Travel Budget Detail (Amount in INR) :

Justification (Inland Travel)	Year-1	Year-2	Year-3	Total
For conducting testing , analysis, and attending conferences etc.,	30,000	30,000	30,000	**90,000**

Equipment Budget Detail (Amount in INR) :

Generic Name ,Model No. , (Make)/ Justification	Quantity	Spare time	Estimated Cost
ZEISS EVO 10 The Smart Alternative to Tabletop ZE10VP TM3030plus (Japan) (ZE10VP TM3030plus) *Testing analysis*	1	40 %	**14,29,500**
Stir casting equipment ANIL SCIENTICO (SCIENTICO) *Easy to Operate* *Single person can handle the entire casting process.* *Adjustable Speed controls are provided for Stirring and rotary centrifugal casting* *Safe and Secure* *Exposure to heat & melt is very minimal* *Thermonuclear broken indicator and over load protection.* *Uniform Mixing*	1	40 %	**4,50,256**

Contingency Budget Detail (Amount in INR) :

Justification	Year-1	Year-2	Year-3	Total
Printing, testing and analysis etc.,	1,25,000	1,00,000	75,000	**3,00,000**

Overhead Budget Detail (Amount in INR) :

Justification	Year-1	Year-2	Year-3	Total
Power, generator, water, and miscellaneous etc.,	25,000	25,000	25,000	**75,000**

PROFORMA FOR BIO-DATA (to be uploaded)

1. Name and full correspondence address:

Dr. I. S. N.V. R. PRASANTH, Associate Professor, Mechanical Department
Malla reddy Engineering College(Autonomous)
Maisamma guda (H), Medchal-Malkajgiri District, Secunderabad, Telangana State-500100

2. Email(s) and contact number(s):

Prasanth5109@gmail.com
9963244299

3. Institution: Malla reddy Engineering College (Autonomous)

Maisamma guda (H), Medchal-Malkajgiri District, Secunderabad, Telangana State-500100

4. Date of Birth : 10/12/1977

5. Gender (M/F/T): Male

6. Category Gen/SC/ST/OBC: OC

7. Whether differently abled (Yes/No): No

8. Academic Qualification (Undergraduate Onwards)

	Degree	Year	Subject	University/Institution	% of marks
1.	B. Tech	2005	Mechanical Engineering	JNTU College of Engineering Hyderabad	61.1
2.	M.Tech	2010	Mechanical Engineering (IE & M)	J.B.I.E.T, Hyderabad, JNTUH	71.2
3.	Ph.D	2020	Mechanical Engineering	JNTU, Hyderabad	
4.					

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.

Ph.D thesis title: ''An Investigation on Machining of Reinforced Glass Composite Materials and Optimization of Cutting Parameters'' under the guidance of Dr.D.V.Ravishankar, Principal, TKRCET, Meerpet, Hyderabad and Dr.Manzoor Hussain, Professor & Registrar, JNTUH, Hyderabad.

10. Work experience (in chronological order).

S.No.	Positions held	Name of the Institute	From	To	Pay Scale
1	Associate Professor	Malla Reddy Engineering College (Autonomous)	December 2021	Till date	65,000/-
2	Associate Professor	Guru Nanak Institute of Technology, Hyderabad.	July 2018 to	November 2020	48,000/-
3	Associate Professor	St. Mary's Integrated campus (St.Mary's group of institutions), Hyderabad.	January 2016	May 2018	42,000/-
4	Assistant Professor	Bharat Institute of Engineering and Technology, Hyderabad	July 2013	December 2015	40,000/-
5	Associate Professor	Dhruva Institute of Engineering and Technology	October 2008	June2013	30,000/-
6	Assistant Professor	Hits College of Engineering & Technology, Hyderabad.	August 2005	September 2008	8,000/-

11. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

S.No	Name of Award	Awarding Agency	Year

12. Publications *(List of papers published in SCI Journals, in year wise descending order).*

S.No.	Author(s)	Title	Name of Journal	Volume	Page	Year
1	I.S.N.V.R.Prasanth, D.V.Ravishankar, M.Manzoor Hussain, Chandra Mouli Badiganti	Influence of Milling Process Parameters and Significance of Tools to Improve the Surface Quality of GFRP	Machining Science and Technology. DOI:https://doi.org/10.1080/10910344.2021.199880 (Taylor & Francis Ltd	Vol.26, No.1	120-136.	2022

		Composites				
2	I.S.N.V.R.Prasanth, D.V.Ravishankar, Manzoor Hussain, Vinod Sharma	Investigations on Performance characteristics of GFRP Composites in Milling	International Journal of Advanced Manufacturing Technology	99(5-8)	1351–1360	2018
3	I.S.N.V.R.Prasanth, D.V.Ravishankar, Manzoor Hussain	Critical Analysis in Milling of GFRP Composites by Various End Mill Tools	Materials Today: Proceedings	5(6)	14607–14617	2018
4	Manzoor Hussain	cutters in machining of GFRP Composite Laminates	Materials Today: Proceedings	4(2)	2800-2805	2017

13. Detail of patents.

S.No	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Agency/Country	Status

14. Books/Reports/Chapters/General articles etc.

S.No	Title	Author's Name	Publisher	Year of Publication
1 Book chapter	Influence of milling process parameters on the surface quality of GFRP composites in Glass Fibre – Reinforced Polymer Composites	Vinod Kumar Sharma, Sunil Pathak, I.S.N.V.R. Prasanth, D.V. Ravishankar, M. Manzoor Hussain	Walter DE GRUYTER	2020

15. Any other Information (maximum 500 words)

BIO-DATA

1. Name and full correspondence address : Dr. A.RAVEENDRA
   Professor,Dept of Mechanical Engg
   Mallareddy EngineeringCollege
   Maisammaguda,Secunderabad,Telangana
   500100.
2. Email(s) and contact number(s) : akunururaveendra@mrec.ac.in
   9502294258
3. Institution : MallaReddy Engineering College (**A**)
4. Date of Birth : 17-12-1970
5. Gender (M/F/T) : M
6. Category Gen/SC/ST/OBC : OBC
7. Whether differently abled (Yes/No) : No
8. Academic Qualification :

	Degree	Year	Subject	University/Institution	% of marks
1	B.Tech	1994	Mechanical Engg	REC-Warangal, AP.	58
2	M.Tech	2003	Production Engg	VTU-Belgaum	72
3	Ph.D	2017	Welding	JNTUH-Hyderabad	

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.

   Title: Experimental Investigations on welding Characteristics of Aluminium alloy(5052) and Alloy steel(EN24) using gas tungsten arc welding(GTAW).

   Year of Award : 2017

   Guide : Dr.B.V.R Ravi kumar

   University : JNTUH-Hyderabad

10 .Work experience :

S. No.	Positions held	Name of the Organization/ Institute	From	To	Pay Scale
1.	Planning Engineer	H.H.V CO.Pvt Ltd, Bangalore	1995	2000	Rs 6000+ perks
2.	Assist.prof	Dr.SGIET- Markapur	2003	2005	Rs 8000-275-13500
3.	Assoc.prof	Malla Reddy Engg College	2005	Feb 13th 2020	37400-67000
4.	Principal	Malla Reddy Engg College	Feb14th 2020	Till date	

11.Publications (List of papers published in Journals.

S.No	Author(s)	Title	Name of Journal	Volume	Page	Year
1.	A.Raveendra, Dr.B.V.R.Ravi Kumar	Welding characteristics of Aluminium alloy (6082) and stainless steel(304) weldments, using pulsed and non-pulsed current GTAW	Technical journals(IJMEAR) ISSN:2249-6548	Vol 02, issue 03	50-59	Aug 2011
2.	B.Tularirama Rao K.Srinivas P.Rami Reddy A.Raveendra B.V.R.Ravi kumar	Effect of processing parameters on surface finish of the components processed by CNC turning machine	Technical journals(IJMEAR) ISSN:2249-6564	Vol 04,issue 01	224-228	Jan-Mar 2013
3.	A.Raveendra B.V.R.Ravi Kumar	Effect of pulsed current on welding characteristic of aluminium alloy(5052) using gas tungsten arc welding	IJSR, ISSN:2319-7064	VOL 2 Issue 5	82-86	May 2013
4.	A.Raveendra B.V.R.Ravi Kumar	Effect of pulsed current on welding characteristic of EN19alloy steel using gas tungsten arc welding	IJIRSET ISSN:2319-8753	Vol 2 Issue 5	1359-1367	May 2013
5.	A.Raveendra B.V.R.Ravi Kumar	Experimental study on pulsed and non-pulsed current TIG welding of stainless steel(SS304)	IJIRSET ISSN:2319-8753	Vol:2, Issue 6	2337-2344	June 2013
6.	A.Raveendra B.V.R.Ravi Kumar	Experimental study on pulsed and non-pulsed current tig welding of aluminium sheet(6082)	IJSER ISSN:2277-2685	Vol-3 Issue 6	4102-4108	June 2013
7.	B.Tularirama Rao Dr.K.Srinivas P.Rami Reddy A.Raveendra Dr.B.V.R.Ravi kumar	Experimental study on the effect of cutting parameters on surface finish obtained in CNC turning operation	IJIRSET ISSN:2319-8753	Vol 2 Issue 9	4547-4555	Sept 2013
8.	A.Raveendra B.V.R.Ravi Kumar	Effect of pulsed current on welding characteristic of EN24	IJAST ISSN:2229-5216	Vol 8 No 1	28-37	Jan 2014

		alloy steel using gas tungsten arc welding				
9.	A.Raveendra Dr.B.V.R.Ravi Kumar Dr.A.Siva Kumar V.Prudhvi Kumar Reddy	Influence of welding parameters on weld characteristics of 5052 aluminium alloy sheet using tig welding	IJAIEM ISSN:2319-4847	Vol 3 Issue 3	186-190	Mar 2014
10.	B.Tularirama Rao Dr.K.Srinivas P.Rami Reddy A.Raveendra Dr.B.V.R.Ravi kumar	Measuring cutting forces while cutting of different metals with different speeds	IJAIEM ISSN:2319-4847	Vol 3 Issue 9	163-169	Septem ber 2014
11.	B.Tularirama Rao Dr.K.Srinivas P.Rami Reddy A.Raveendra Dr.B.V.R.Ravi kumar	Finding cutting forces while turning operations on lathe machine at different depth of cut of different metals	IJIRSET ISSN:2319-8753	Vol 3 Issue 10	16866-16872	Oct 2014
12.	A.Raveendra B.V.R.Ravi Kumar	Micro-Hardness and mechanical properties of EN24 Alloy steel weldments using pulsed and non-pulsed current gas tungsten arc welding	IJIRSET ISSN:2319-8753	Vol 03 Issue 10	16588-16592	Oct 2014
13.	A.Raveendra .B.V.R.Ravi Kumar Dr.Siva Kumar Mr.N.Santhosh	Effect of welding parameters on 5052 aluminium alloy weldments using TIG welding	IJIRSET ISSN:2319-8753	Vol 3 Issue 3	10302-10308	Mar 2014
14.	A.Raveendra .B.V.R.Ravi Kumar Dr.Siva Kumar Mr.V.Pruthvi Kumar Reddy	Influence of welding parameters on weld characteristics of 5052 aluminium alloy sheet using TIG welding	IJAIEM ISSN:2319-4847	Vol 3 Issue 3	186-190	Mar 2014
15.	K.Vinay A.Raveendra	Effect of exhaust gas recirculation on the performance and emission characteristic of diesel engine using biodiesel	IJERT ISSN:2278-0181	Vol 4 Issue 5	1276-1281	May 2015
16.	A.Raveendra M.Satish Sagar Dr.B.V.R.Ravi Kumar	Effect of pulsed current on TIG weldments of aluminium alloy (5052) and alloy steel(EN24)	IJIRSET ISSN:2319-8753	Vol 4 Issue 5	3095-3101	May 2015
17.	J.Padmaja A.Ravindra	Design and Analysis of a Heat Sink for a High Power LED System	IJERT ISSN:2278-0181	Vol 4 Issue 7	975-982	July 2015
18.	Ch.Naveen Kumar M.V.Vara Lakshmi	Measurement of cutting forces while turning different	IJIRSET ISSN:2319-8753	Vol 4 Issue 7	6070-6076	July 2015

	A.Raveendra	materials by using lathe tool dynamometer with different cutting tool nomenclature				
19.	V.Sravanthi A.Raveendra	Experimental investigation on influence of welding parameters on welding characteristics of aluminium alloy using TIG welding	IJETTS ISSN:2348-0246	Vol 5 Issue 3	407-418	Sept 2015
20.	Korri Pradeep Kumar A.Raveendra	Thermal load effect on value by using conventional and blended fuels	IJOER ISSN:2321-7758	Vol 3 Issue 6	211-215	Nov-Dec 2015
21.	V.Lokesh Varma A.Raveendra	Structural design and FEM analysis of butterfly valve	AIJREAS ISSN:2455-6300	Vol 1 Issue 6	56-62	June 2016
22.	B.Akshay Kumar A.Raveendra	Effect of pulsed and non-pulsed current on welding characteristics of AA6061 Aluminium alloy welded joints using Tig welding	IJOER ISSN:2395-6992	Vol 2 Issue 7	93-102	July 2016
23.	K.Abhilash Korvi A.Raveendra	Improving productivity and quality by changing feeding system in an injection moulding process	GJAET ISSN:2277-6370	Vol 6 Issue 1	1-5	2017
24.	M. Ravi Teja A.Raveendra	Simulation in composition of cement manufacturing and comparison of mechanical properties	IJSETR ISSN:2319-8885	Vol 6 Issue 3	1-7	Feb 2017
25.	Ch.Prahallad A.Raveendra	Modeling and optimization of cushioning system in hydraulic cylinder to achieve performance characteristics	IJIR ISSN:2454-1362	Vol 3 Issue 1	2122-2128	2017
26.	B.Sampath A.Raveendra	CFD analysis of steam ejector with different nozzle diameter	IJR ISSEN:2348-6848	Vol 4 Issue 14	2448-2452	Nov 2017
27.	Bhiksha Gugulothu A.Raveendra M.Uma Mahesh	Effect of process parameters on Mrr and surface roughness in turning process of EN8	IFERP ISSN:2456-1290	Vol 2 Issue 9	28-34	Sep 2017
28.	A.Rohith,Dr.A.Raveendra,Dr.D.K.Nageswara rao,M.Ramesh Babu	Stress Distribution around Polygonal Holes in Graphite/Epoxy Laminates Under in Plane Loading	IJR ISSN:2348-6848	VOL 05 Issue 01	1488-1507	Jan 2018
29.	A.Raveendra, B.V.R.Ravi Kumar, S.Sudhakara Reddy	Micro-Hardness and Mechanical properties of 5052 aluminium alloy weldments using pulsed and non-pulsed current gas tungsten arc welding	International Journal of Mechanical and Production Engineering Research and Development (IJMPERD) ISSN:2249-8001 (**scopus**) Indexed Journal	Vol.8,Issue 6,	691-698	Dec2018
30.	A.Raveendra,K.Sri Noothan Reddy	Infinitely Variable Valve Lifting	International Journal of Innovative Technology and Exploring	Vol.8 Issue-2S	280-285	Dec 2018

			Engineering(IJITEE) ISSN:2278-3075 (**Scopus**) Indexed			
31.	A.Raveendra,Mohammed Abdul Mubashir	Design and Analysis of Leaf Spring for Heavy Weight Vehicles using Composite Materials	International Journal of Innovative Technology and Exploring Engineering(IJITEE) ISSN:2278-3075 (**Scopus**) Indexed	Vol.8 Issue-2S	286-291	Dec 2018
32.	B.Tulsiramarao,P.Ramreddy,K.Srinivas,A.Raveendra	Effect of tool Overhang on turning operation using finite element model	International Journal of Innovative Technology and Exploring Engineering(IJITEE) ISSN:2278-3075 (**Scopus**) Indexed	Vol.8 Issue-4S2	486-488	Dec 2018
33.	B.Tulisiramarao,P.Ramreddy,K.Srinivas,A.Raveendra	A Multivariable model of orthogonal turning operation on cutting dynamics modeled by optimum cutting Parameters using genetic algorithm	International Journal of Recent Technology and Engineering(IJRTE) ISSN:2277-3878 (**Scopus**) Indexed	Vol-7,Issue-5S2	530-535	Jan 2019
34.	A.Raveendra	Experimental Research of wire cut EDM for SR&MRR using Taguchi Method	International Journal of Engineering and Advanced Technology(IJEAT) ISSN:2249-8958 (**Scopus**) Indexed	Vol-9,Issue-2	3096-3701	Dec 2019
35.	A.Raveendra	Characterization of Roselle &Kevlar hybrid Composites	International Journal of Engineering and Advanced Technology(IJEAT) ISSN:2249-8958 (**Scopus**) Indexed	Vol-9,Issue-2	3699-3701	Dec 2019
36.	Dr.A.Raveendra	Optimization of process parameters in Turning operation by using taguchi method Special issue-NCAETS 2019	Suraj punj Journal for Multidisciplinary Research(SPJMR) UGC,approved https://app.box.com/s/b6t4n95da16g0uve3bk5shap6397odpv	Vol 9,Issue 4 ISSN:2394-2886	473-479	Dec 2019

37.	Dr.A.Raveendra	A Study on the effect of process parameter variation in TIG welding	Suraj punj Journal for Multidisciplinary Research(SPJMR) UGC,approved https://app.box.com/s/077yde65q7vyia7wdgu1i8nd191nbb4m	Vol 9,Issue 4 ISSN:2394-2886	469-472	Dec 2019
38	K.Chaitanya, Dr.A.Raveendra	Design and analysis of composite drive shaft	International Journal of Research ISSN NO:2236-6124 (UGC)	Vol 8, Issue IV	4031-4041	Dec/2019
39	S.Praveen Kumar Dr.A.Raveendra	Practical Investigation of Tool Wear Mechanism of PCBN Material by using FSP	International Journal of Advanced Science and Technology(IJAST)	ISSN:2005-4238 Vol.28, No.18,	338-348	2019
40	Dr.A.Raveendra, D.Nithis kumar	Exploration of indispensible properties of textile-grade glass fibers/white caustic treated banana fiber hybrid composite	ELSEVIER Material Today :Proceedings (**SCOPUS**)	Article in press		2020
41	Mr.K.Tarun kumar Dr.A.Raveendra	Study and Effectiveness and Reconfiguration of a Jar Tilting Mechanism of an RFC Machine	Journal of Engineering, computing and Architecture(jeca) UGC,approved	Vol:10, Issue 4,ISSN:1934-7197	159-173	2020

12. Detail of patent:

S.No	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Agency/Country	Status
1	Apparatus to automatically draw two –dimensional drawing	Malla Reddy Engineering College.Department of Mechanical Engineering	Application no. 201841017390A ApplicationDate: 25/05/2018		India	published
2	An Extendable and height adjustable ceiling fan with eject abla blades.	Malla Reddy Engineering College.Department of Mechanical Engineering	Application no.202041003637A Dated27/01/2020		India	published

13. Books/Reports/Chapters/General articles etc.

S.No	Title	Author's Name	Publisher	Year of Publication
1.	An Overview of Additive manufacturing Technology	Dr. A. Raveendra Dr. N. Rishi Kanth Dr. G. Suryaprakash Rao Dr. L. Rasidhar	AkiNik Publications New Delhi	In progress
2.				

14. Any other Information (*maximum 500 words*)

a. Conferences Attended

Sl No	**Name of the Conference**	**Title of the paper**	**Organized by**	**Period**
1.	National seminar on applications of optimization in mechanical engineering	Taguchi technique as a tool to optimize the operating parameters of CNC drilling to minimize burr size	Gudlavalleru Engineering college Andhra Pradesh.	18-20 Jan 2008
2.	International conference on renewable energy and Environment for sustainable development	Transesterification process of Bio-Diesel	IIT-Delhi	11^{th}-13^{th} Dec 2008 Pp623-631
3.	NEC128-PA05MM-66NAC09	Development of mathematical models in gas metal arc welding	Dayanand sagar college of Engineering Bangalore	2009
4.	International conference on computational methods in Engg & Science-2009	Experimental investigations of Jatropa oil(preheated and blends) in a direct injection C.I Engine.	CBIT-Hyderabad	8^{th}-10^{th} Jan 2009
5.	National conference on excellence in new technologies in new mechanical Engineering(ENTIME)	Comparison of welding characteristics between TIG& MIG weldments	Malla Reddy Engineering College Secunderabad	12^{th} &13^{th} Dec 2009
6.	National conference on Aerospace Engineering (NCAE-2009)	Mechanical properties of gas metal arc weldments	Malla Reddy college of Engineering and Technology	Dec 04-05 2009
7.	ICSE 2010	Optimizing pulsed current TIG welding parameters to refine the fusion zone	Dayanand sagar Engineering college Bangalore	April 21-23 2010

8	International conference in Material processing& Characterization(ICMPC-2012)	Experimental Investigation on welding characteristics of aluminium alloy(6082) weldments using pulsed and non-pulsed current GTAW	Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad	8th-10th Mar2012
9	RITS- ICAEM-2012	Experimental Investigations on welding characteristics of stainless steel (304) weldments using pulsed and non-pulsed current GTAW.	Royal institute of Technology and management	28th and 29th Feb 2012
10	RCMS-2K13	Supersonic flow through conical nozzle with various angles of divergence	Malla Reddy Engineering College	Sept 20th &21st 2013
11	RCMS-2K13	Experimental investigations on welding characteristics of similar metal weldments and dissimilar metal weldments using arc welding	MallaReddy Engineering College	Sept 20th &21st 2013
12	RITS- ICAEM-2013	Characteristics of force feed on stability in various turning process	Royal college of management and sciences Hyderabad	Feb 28 &29 2013
13	RITS- ICAEM-2013	Comparative study on welding characteristics of EN8 &EN31 alloy steel weldments using Gas Tungsten Arc Welding	Royal college of management and sciences Hyderabad	Feb 27&28 2013
14	Emerging Trends in Science, Technology& Management (NCETSTM 2K14)	Numerical analysis of free convection with effect of surface radiation between parallel vertical heated plates with experiment data	Malla Reddy Engineering college Secunderabad	08-09 Aug 2014
15	International conference on Advanced Materials and Manufacturing Technologies(AMMT)	Micro-Hardness and Mechanical properties of 5052 aluminium alloy weldments using pulsed and non-pulsed gas tungsten arc weldments	JNTUH-Hyderabad	Dec18-20 2014
16	Inter National conference on Emerging Technologies in Mechanical Sciences(ICEMS-2014)	Microscopic study of EN24 alloy steel weldments using pulsed and non-pulsed current gas tungsten arc welding	Malla Reddy college of Engineering and Technology Secunderabad	Dec-26-27 2014
17	ICICASEMC-2016	Structural Design and FEM Analysis of Butterfly valve	Anveshana Educational and Research Foundation	18th June 2016

18	ICRCET 17	Effect of process Parameters on MRR and Surface Roughness in Turning process of EN8	Annamacharya Institute of Technology & Sciences,Ttrupathi.AP.	12th-13th Sept 2017

FDP/ Workshops Attended		
Sl.no	**Name of the work shop**	**Organization & Year**
1	**Refresher course** on Operational Research	Departments of Civil &Mechanical Engineering during 21st -22nd June 2007.
2	3 day **national seminar** on Applications of Optimization Techniques in Mechanical Engineering ,	Gudlavalleru Engineering college During 18-20 Jan 2008.
3	Two day **refresher course** in Internal Combustion Engines	Dept of Mechanical Engineering Malla Reddy Engineering on 18th &19th of June 2008.
4	**FDP** on Design Aspects of Mechanical &Aerospace Engineering	Departments of Mechanical &Aeronautical Engineering MRCET &CMEC from 2nd to 10th July 2009.
5	Two day **workshop** on Recent Developments in Mechanical Engineering	Dept of Mechanical Engineering. Malla Reddy Engineering college on12th &13th of March 2011
6	A Two day **national level work shop** under TEQIP-II on Recent Advances in CFD for industrial Applications.	Dept of Mechanical Engineering. Malla Reddy Engineering college on24th &25th of March 2012
7	One day **workshop** on Advanced trends in I.C engines and combustion	28th Feb 2013 organized by Dept of Mechanical Engineering. JNTUH college of Engineering
8	One day **workshop** on advances in welding and Surface Engineering(AWSE)	Indian Institute of Welding ,Hyderabad branch on 17th Oct17th October 2014.
9	5-day workshop(**FDP**) on principles of additive/ Generative Manufacturing	IIT-Hyderabad. Dec 1-4, 2014
10	Two-day **workshop** on Engineering Drawing	During 12th &13th Sept 2014, MallaReddy Engineering College
11	Two-day **FDP**on Finite Element Analysis	Mallareddy Engineering College during 20th and21st Feb 2015 by dept of Mechanical Enineering.
12	A **two day workshop** on Innovations in Waste Water and Energy Technologies	BITS Pilani, Hyderabad Campus during 13th &14th July 2015.
13	**One day workshop** on Outcome Based Education and Accreditation	JNT University,Hyderabad,Kukatpally on Sept 2015
14	One week **FDP** on Applications of CFD in Thermal-fluids Engineering	CMR Engineering College Kandlakola.Medchal,Hyderabad. During 29 Feb-06 Mar 2016
15	Six day **FDP** on Hyper-Works &Computational Fluid Dynamics	St.Martin's Engineering college,Dulapally,Secunderabad. 5th -10th Dec 2016

16	**FDP** on Engineering Mechanics made easy	Narasimha Reddy Engineering College during 28th June to 2nd July 2017.
17	**AICTE** sponcered two weeks **FDP** on Design for Manufacturing,Assembly,Environment for Product Innovation &Optimization	Dr.MAHALIMGAM college of Engineering and Technology-Pollachi.25th Nov 2019 to 7th Dec 2019.
18	**AICTE** sponcered one week Short Term Training Programme(STTP) on Innovations and Research Challenges in LoT Applications for Smart Manufacturing and Smart Design	Sri Ramakrishna Engineering – Vattamalaipalayam,N.G.G.O.Colony post.Coimbatore,Tamalnadu. From 09.12.2019 to 14.12.2019.
19	Five day **FDP(**online**)** on Emerging Technologies in Robotics	MallReddy Engineering College(Autonomous),Maisammaguda,Secunderabad.
20	Six day **FDP** (online) on Emerging areas in Manufacturing	Vimal jyothi Engineering College,Trivandrum,Kerala..
21	One week **FDP(**online**)** on Advanced NDT Techniques &Applications in Industry	Indian society for Non-Destructive Testing,Hyderabad Chapter in association with department of Mechanical Engineering,QISCET.Ongole from 25th to 29th May,2020.
22	One week **FDP** (online) on contemporary developments in manufacturing and industrial technologies	Dept of mechanical Engineering, Pragati Engineering College ,during 9th to 13th June, 2020
23	One week **FDP**(online) on multi objective optimization for mechanical applications	Dept of Mechanical Engineering QIS College of Engineering and Technology, Ongole,AP.During 8th to 12th June 2020.
24	One week **FDP**(online) on Disruptive Technologies in Mechanical Engineering	Dept of Mechanical Engineering Sreenidhi Institute of Science and Technology-Hyderabad during 8th to 13th June 2020.
25	Three day **FDP**(online) on "The Role of Artificial Intelligence and Machine Learning in Robotics and Automation"	During 1st-3rd June 2020 organized by Science and Technology Innovation Center, Anurag University, Hyderabad.
26	One Week **FDP** (Online) on **"**Advanced NDT Techniques & Applications in Industry	From 25th to 29th May,2020 organized **by** Indian Society for Non Destructive Testing, Hyderabad Chapter in association with Department of Mechanical Engineering, QISCET, Ongole.
27	8 weeks FDP(online) on Advanced Manufacturing Processes by IIT-Madras	From Sep-Nov 2020. Organized by IIT-M
28	AICTE approved Two weeks FDP (online) programme on Renewable Energy Intervention in industry, commercial and domestic application	From 14th Dec to26th Dec 2020 organized by Rajeev Gandhi memorial college of Engineering and Technology-Nndyal AP.

Endorsement from the Head of the Institution of PI

This is to certify that:

1. Institute welcomes participation of Name: ..._**Dr. I.S.N.V.R.Prasanth**_.....Designation: ... **Associate Professor**...as the Principal Investigator and ..... **Dr. A.Raveendra** .....as the Co- Investigator/s for the project titled: .... Fabrication and Mechanical Characterization of Nano and hybrid Aluminium based Metal matrix composites and that in the unforeseen event of discontinuance by the Principal Investigator, the Co-Investigator will assume the responsibility of the fruitful completion of the project with the approval of SERB.

2. The PI ... **Dr. I.S.N.V.R.Prasanth**.....is a permanent or regular employee of this Institute/University/Organization and has ....**12years 9 months....** of regular service left before superannuation.

3. The project starts from the date on which the University/Institute/ Organization/College receives the grant from SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi.

4. The investigator will be governed by the rules and regulations of University/ Institute/Organization/College and will be under administrative control of the University/ Institute/Organization/College for the duration of the project.

5. The grant-in-aid by the SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi will be used to meet the expenditure on the project and for the period for which the project has been sanctioned as mentioned in the sanction order.

6. No administrative or other liability will be attached to SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi at the end of the project.

7. The University/Institute/Organization/College will provide basic infrastructure and other required facilities to the investigator for undertaking the research project.

8. The University/ Institute/Organization/College will take into its books all assets created in the above project and its disposal would be at the discretion of SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi.

9. The University/ Institute/Organization/College assumes to undertake the financial and other management responsibilities of the project.

Seal of

University/ Institute/Organization/College

Date:

Malla Reddy Engg. College 500 100 Hyderabad

Signature

Registrar of University/Head of the Institute/
Head of organization / Principal of College

Malla Reddy Engineering College
Maisammaguda, Dhulapally,
(Post Via Kompally), Sec'bad-500100.

Endorsement from the Head of the Institution of Co-PI

This is to certify that:

1. Institute welcomes participation of Name: ... **Dr. I.S.N.V.R.Prasanth**.....Designation: ... **Associate Professor**...as the Principal Investigator and ..... **Dr. A.Raveendra**.....as the Co- Investigator/s for the project titled: .... Fabrication and Mechanical Characterization of Nano and hybrid Aluminium based Metal matrix composites and that in the unforeseen event of discontinuance by the Principal Investigator; the Co-Investigator will assume the responsibility of the fruitful completion of the project with the approval of SERB.

2. The Co-PI,..... **Dr. A.Raveendra** ..... is a permanent or regular employee of this Institute/University/Organization and has ....**09 years, 10 months**....years of regular service left before superannuation

3. The Co-PI will be governed by the rules and regulations of University/ Institute/Organization/College and will be under administrative control of the University/ Institute/Organization/College for the duration of the project.

4. The grant-in-aid by the SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi will be used to meet the expenditure on the project and for the period for which the project has been sanctioned as mentioned in the sanction order.

5. No administrative or other liability will be attached to SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi at the end of the project.

6. The University/Institute/Organization/College will provide basic infrastructure and other required facilities to the investigator for undertaking the research project.

7. The University/ Institute/Organization/College will take into its books all assets created in the above project and its disposal would be at the discretion of SCIENCE & ENGINEERING RESEARCH BOARD (SERB), New Delhi.

8. The University/ Institute/Organization/College assumes to undertake the financial and other management responsibilities of the project.

Seal of

University/ Institute/Organization/College

Date:

Signature

Registrar of University/Head of the Institute/
Head of organization / Principal of College

Principal
Malla Reddy Engineering College
Maisammaguda, Dhulapally
(Post Via Kompally), Sec'bad-500100.

Certificate from the Investigator

TITLE: Fabrication and Mechanical characterization of Nano and hybrid aluminum based metal matrix composites

It is certified that

1. The same project proposal has not been submitted elsewhere for financial support.

2. We/I undertake that spare time on equipment procured in the project will be made available to other users.

3. We/I agree to submit a certificate from Institutional Bio safety Committee, if the project involves the utilization of genetically engineered organisms. We/I also declare that while conducting experiments, the Bio safety Guidelines of Department of Biotechnology, Department of Health Research, GOI would be followed in to.

4. We/I agree to submit ethical clearance certificate from the concerned ethical committee, if the project involves field trails/experiments/exchange of specimens, human & animal materials etc.

5. The research work proposed in the scheme/project does not in any way duplicate the work already done or being carried out elsewhere on the subject.

6. We/I agree to abide by the terms and conditions of SERB grant.

Signature of the Principal Investigator
Name of the Principal Investigator:

21/3/22

Dr. I.S.N.V.R.Prasanth
Date: **21/03/2022**
Place: **Hyderabad, TS, India**

Signature of the Co-Principal Investigator
Name of the Co-Principal Investigator:

Dr. A.Raveendra
Date: **21/03/2022**
Place: **Hyderabad, TS, India**

Undertaking by the Principal Investigator

To

The Secretary
SERB, New Delhi

Sir,

I **Dr. I.S.N.V.R.Prasanth** here by certify that the research proposal t it led **Fabrication and Mechanical characterization of Nano and Hybrid Aluminum based metal matrix composites** submitted for possible funding by SERB, New Delhi is my original idea and has not been copied/taken verbatim from anyone or from any other sources. I further certify that this proposal has been checked for plagiarism through a plagiarism detection tool i.e. **TURNITIN SOFTWARE** approved by the Institute and the contents are original and not copied/taken from any one or many other sources. I am aware of the UGCs Regulations on prevention of Plagiarism i.e. University Grant Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulation, 2018. I also declare that there is no plagiarism charges established or pending against me in the last five years. If the funding agency notices any plagiarism or any other discrepancies in the above proposal of mine, I would abide by whatsoever action taken against me by SERB, as deemed necessary.

21/3/2022

Signature of the PI with date

Name: **Dr. I.S.N.V.R.Prasanth**

Designation: **Associate Professor**