



# SR University, Warangal DEPARTMENT OF CIVIL ENGINEERING CENTRE FOR CONSTRUCTION METHODS AND MATERIALS (CCMM)

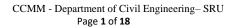
# Report - June 2018 to December 2021

Submitted Date: 25.01.2022

Nurturing material research focusing on sustainable material innovation for societal benefit

Submitted By, Dr.K.Rajesh Kumar, Associate Professor/ Head – CCMM, Department of Civil Engineering, SR University, Warangal +91-9443224506. <u>dir.ccmm@sru.edu.in</u>







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## INTRODUCTION

- Centre for Construction Methods and Materials established on 09/06/2018 aims to promote active research targeting Sustainable Materials and Methods used in projects, using transformative approaches in collaboration with academia, industries and other stake holders.
- A Centre student can also explore other <u>interdisciplinary research centers@SRU</u>

## > VISION

To be a national leader in fostering educational pedagogies, discoveries and innovations in the area of construction methods and materials by leveraging SREC's strengths in cognitive science, design thinking and entrepreneurship.

#### > MISSION

- Advance multi-disciplinary, experiential learning opportunities to support student professional and leadership development
- Enhance the competitiveness of local industries by addressing their problems in an innovative, creative and entrepreneurial approach.
- Promote the knowledge creation and sharing by creating a community of learners and scholars who are engaged in applied research.

#### > OBJECTIVES OF THE CENTRE:

The Center for Construction Methods and Materials' motto is to engage students in the construction enterprise while serving the needs of the industry and society. This centre focuses on the design and development of newer building materials with engineered properties, products, production technologies, and tools. The primary thrust areas of the center are –

- **Design of innovative materials and methods –** Design, analysis, fabrication and testing of innovative construction materials.
- *Sustainable construction materials* Development of sustainable construction material by converting the waste materials and industrial byproducts.
- *Center for material analysis and testing* Analysis and testing of construction materials by providing the state-of-the-art equipment and techniques.

11						
S.No.	Name of the faculty	Designation	Specialization	Contact		
1	Dr. K Rajesh Kumar	Associate	Structural	k.rajeshkumar@sru.edu.in		
		Professor	Engineering	9443224506		
2	Dr. R. Gobinath	HOD- Civil	Geo technical	r.gobinath@sru.edu.in		
			Engineering	9003394964		
3	Dr. P.Murthy	Professor	Construction	p.murthi@sru.edu.in		
			Technology and	8220772148		
			Management			
4	Mr. G.Swamy yadav	Assistant	Structural	g.swamyyadav@sru.edu.in		
		Professor	Engineering	9704019477		

#### • TEAM MEMBERS:







## *i* SCHOLARS ROLE

• The Centre students will have an opportunity to work as iScholars at the <u>Center for</u> <u>Construction Methods and Materials (CCMM)</u> which helps to expand their intellectual horizons and make them industry-ready.

Role	Potential Activities
Innovation Leaders	Initiate new project ideas and lead extra-curricular teams Participate in competitions .Collaborate with fellow iScholars and mentors on a one-year entrepreneurial journey from identifying an opportunity to creating a marketable product prototype
Independent Thinkers	Conduct independent research Publish a journal paper
Inspiration Outreach Ambassadors	Organize competitions, workshops and other events Promote center activities by visiting other educational institutions Publish newsletters

iScholars acquire leadership skills by leading community outreach activities and coordinating technical events.

## Students Selection criteria

Eligibility:

- > Must be an engineering or business major.
- > Apply in 2nd semester 2nd year.
- > At least 65% percentage in Academic and Attendance.

#### **Evaluation criteria:**

Performance on a day long mini-project. Research abilities (IQ, summarization, gathering info, exploring)

#### Writing skills, Presentation skills, Enthusiasm, Persistence and Passion

## Batch & work allotment:

All students are divided into batches, each batch should consists of 6 members i.e 2 students from  $4^{th}$  year , 2 students from  $3^{rd}$  year , 2 students from  $2^{nd}$  year .All batches will be guided by their respective centre faculty. The CCMM meeting will be conducted once in 15 days.



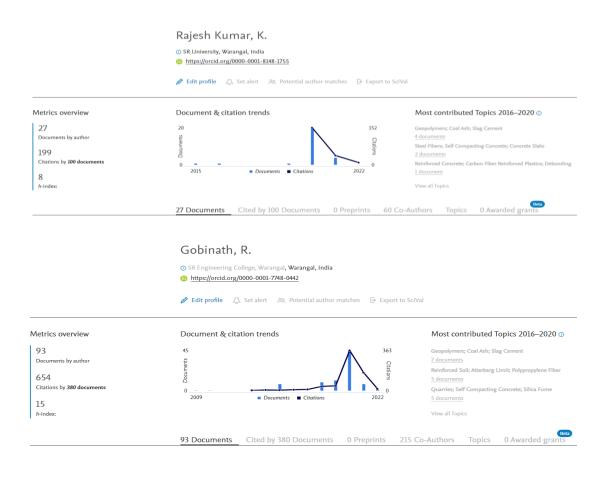


#### ACTIVE RESEARCH AREAS

- 1. Effective Utilization of Septage treatment plant sludge ash with banana fibre for sustainable building Components.
- 2. Structural behaviour of RC Elements by Septage ash and hybrid fibre.
- 3. Masonry Units by industry rejects waste.
- 4. Study on mix design of asphalt for low volume rural roads by industry waste.
- 5. Geotechnical innovations for sustainable infrastructure
- 6. Artificial Intelligence Applications in Civil Engineering
- 7. Geo polymer concrete JOURNALS PUBLISHED:

#### **Scopus/SCI publication**

1	Dr. R. Gobinath	Professor & Head	93
2	Dr. P. Murthi	Professor	44
3	Dr. Rajesh Kumar K	Assoc. Prof.	27
4	Mr.G. Swamy Yadav	Asst. Prof.	12
		Total	176









SR University, Warangal, India
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#### > PATENTS FILED:

Sr.No:	CBR No:	Application No:	Title	Patent Holder
1	28966	202141035467	A Novel Asbestos powder- based compound for Bitumen strength enhancement	Dr.R.Gobinath
2	28970	202141035471	A hybrid silica-based filler for asphaltic concrete strength enhancement	
3	28964	202141035466	A Novel silica-based filler for bitumen strength enhancement	
4	SREC- 006-026	202141002145	Method to incorporate plastic reinforcement for enhancing shear resistance of deep beams	Dr.K.Rajesh Kumar





## > EVENTS CONDUCTED:

#### 2018-19:

Academic Year	Resource Persons	Title of the program	Out come
2018-19	Mr. Nijam Pure, Zonal Head, J.K. Cements Ltd, Hyderabad	Application of White Cement and Decorative Materials in Building Construction	65 students got benefited by this technical talk
2018-19	Dr.P.Rathish Kumar, Professor, Dept of Civil Engg, NITW	Recent Development in Special Structural Concretes	85students got benefited by this technical talk
2018-19	Dr. Sridhar Condoor	Entrepreneurship for Civil Engineers	50 students got benefited by this technical talk

#### 2019-20:

- CCMM conducted sessions on "**G** + 2 illustrate on Design of Reinforced concrete building" on 18 & 19 October 2019 from 9.30 am to 4.30 pm at seminar hall (block I).
- One day **Industrial Visits** were arranged on two locations (Siri construction & Sri manikanda Ready mix plant) on 10.12.19 for Third year students.
- One day seminar on "Material characteristics On Concrete and Highway materials" delivered by Dr. Murthi and Dr. Poongodi on 18.12.2019.
- Dr. R. Gobinath delivered a keynote address on Online courses, e- Books and computer programming software to CCMM students at CADD lab along with CCMM faculty on 20.12.19







## 2020-21:

## National webinar series 1.0 - 16-19 June 2021 - Funded by SRU



# Students outside world interaction

#### 1. Internship/online course

No of students completed EDX course	:	30
No of students completed NPTEL course	:	23
No students attended webinar	:	156
No of student attended quiz	:	97
CSIR summer internship	:	3
Other internship	:	56









## 2. Industrial Visit:



Prof.Sridhar Condoor, Saint Louis University, USA, delivered a keynote address on projects and entrepreneurship to students.



Industrial visit to site construction for students with faculty.





Industrial visit to Lakshmi pre-stress concrete works pvt ltd. ( Railway Sleeper pre-stressing units)



Model making and demonstration of innovation / idea / product to the delegates.





3. Activites @ CCMM

Dr.Murthi -CCMM member delivering Guest lecture on Material Characteristics on Concrete and Highway on 18.12.2019





Centre Students at IIT Madras Research park
- Sustainability and Durability of Concrete
Structures with bi-products with recycled materials.

Industrial Visit with -CCMM members at Gopalpur Individual Villas construction (Siri Construction) on 10.12.2019





One day Workshop on Sustainable materials and Green Buildings on 08 feb,2020 by Dr.V.Rangarao, KL University, Telangana





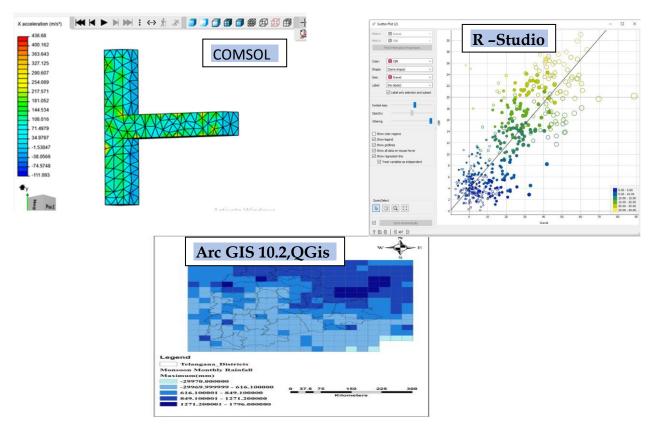
CCMM meeting on 09.12.20 with Newly Joined Students





Adiya Birla - Ultra Tech - Online Seminar for CCMM students

## 4. Students software training:







## 5. Educational Programs (ischolar)

S.No	Course	Course		Hours / Week		
•	Code			Т	P/D	С
1	CE115	Concrete Technology	3	-	-	3
2	CE146	Retrofitting and Rehabilitation of Structures	3	-	-	3
3	CE120	Prestressed Concrete	3	-	-	3
4	CE123	Concrete Technology Lab	-	-	3	2
5	CE124	Highway Engineering Lab	-	-	3	2
6		Sustainable Methods and Materials for Construction	3	-	-	3

The following courses are support by the CCMM

## **AREA OF COLLABORATION - RESEARCH**

- We have proven past record of successful partnership between industries, research institute, government sectors.
- Our area of societal collaboration with government body





Pilot scale study of Cement Mortar Mix For Wall construction at Children's Park, Mysaiah Nagar, Warangal, Telangana.





## STARTUP ESTABLISHED BY STUDENTS AND FACULTY:

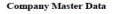
A New Start up named Sustimate solutions Pvt Ltd established on 13.03.2020 Exclusively for developing new sustainable building material.

The Products Exhibited at INK@WASH Conducted by Telangana Government









CIN

Company Name ROC Code

Registration Number

Company Category

Class of Company

Paid up Capital(Rs)

Date of Incorporation

Whether Listed or not

ACTIVE compliance Suspended at stock exchange Date of last AGM

Registered Address

Company SubCategory

Authorised Capital(Rs)





sy no.141, plot no.5 gopalapuram, hanamkonda WARANGAL Warangal TG 506015 IN

dr.rajeshkumar@srecwarangal.ac.in Unlisted

Date of Balance Sheet Company Status(for efiling)

Charges

Email Id

Assets under charge Charge Amount

Number of Members(Applicable in case of

Address other than R/o where all or any books of account and papers are maintained

company without Share Capital)

Date of Creation Date of Modification No Charges Exists for Company/LLP

Directors/Signatory Details

DIN/PAN	Name	Begin date	End date	Surrendered DIN
08694410	SWAMY YADAV GOLLA	13/03/2020	-	
08694472	SUPRIYA ESLAVATH	13/03/2020	-	
08694599	KRISHNAMOORTHY RAJESH KUMAR	13/03/2020	-	
08694679	NAGARAJU GUNTOJU	13/03/2020	-	
08694684	LAVAN KUMAR YELAKANTI	13/03/2020	-	
08719019	MADISHETTI RISHITHA	13/03/2020	-	
08719060	SAI PRIYA PILLALA MARRI	13/03/2020	-	

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Active





Status



## FUNDED FDP/EDP:

 Rs.1,00,000 funding received for conducting FDP program on Sustainable Materials for smart cities : Challenges and Recent trends Sponsored by AICTE Training and Learning (ATAL) Academy - By Dr.K.Rajesh Kumar









• Rs.3,00,000 funding received for conducting program related to eco friendly materials through EDP cell- By **Dr. R. Gobinath.** 



## > RESEARCH PROPOSALS SUBMITTED:

- Submitted by **Dr.K.Rajesh Kumar** For consideration under "Technology Development Transfer (TDT)"- "Effective utilization of septage treatment plant sludge ash with banana fibre for sustainable building components" (TPN/59424 on 28.11.2020).
- Submitted by **Dr.P.Murthi** For consideration under "Technology Development Program (TDP)" Project title: Retrofitting of high aspect ratio RCC column using textile reinforced mortar (TRM) system

SI.No	Nature of Work	No of	Report	organization
		Samples	issued Date	_
1.	Compressive strength of Paver Tiles	03	10.07.19	Sunscape
				Paving
				Systems
2.	Compressive strength of Concrete	03	22.07.19	SRIT Girls
	cube – sample of column concrete			hostel
3.	Compressive strength of Paver block	06	19.08.19	SREC
4.	Compressive strength of Paver block	03	20.08.19	SREC
5.	Compressive strength of Paver block	12	21.08.19	Patel Pavers
6.	Compressive strength of Paver block-	03	27.08.19	SRIT Girls
	Parking Tiles			hostel
7.	Compressive strength of Paver block	10	27.08.19	SREC

## > CONSULTANCY DETAILS:





## ▶ MOUS HAVE BEEN SIGNED : 04

- 1. CBRI-Central Building Research Institute, Rourkela signed on 26.03.2021
- 2. Tide Technocrats, Bangalore signed on 31.08.2021
- 3. Unite, Design Company, Bangalore signed on 04.12.2019
- 4. Hitech Concrete Solution, Chennai signed on 04.12.2019









## > OUTSIDE WORLD INTERACTION BY FACULTY:

- Dr. K Rajesh Kumar, Appointed as a one of the **Panel Advisory Committee** for the Ph.D scholar at VelTech Rangarajan Dr.Sangunthala R & D Institute Of Science and Technology, Chennai.
- Dr. K Rajesh Kumar Delivered Keynote Lecture in One day Webinar on "Sustainable Construction Materials and their Applications" to the Civil Engineering students and Faculty of Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, Tamil Nadu, On 07.11.2020 via Virtual Conferencing (Webinar through Google Meet Platform.)
- Dr. K Rajesh Kumar Delivered Guest Lecture on "Recent Trends on Materials and Methods for smart cities" to the Civil Engineering students and Faculty of KLN Information Technology, Madurai, Tamil Nadu, On 09.05.2020 via Virtual Conferencing (Webinar through Zoom App.)





- Dr. K Rajesh Kumar Delivered Keynote Lecture on "Materials and Methods of • Roads for smart cities" to the Civil Engineering students and Faculty of SNS college of Technology, Coimbatore, Tamil Nadu, On 07.05.2020 via Virtual Conferencing (Webinar through Zoom App.)
- Dr. K Rajesh Kumar Acted as a resource person in one day workshop on • "Quality assessment on Pavement materials and bituminous mix design" on 09. August 2019 at Saveetha School Of Engineering, Chennai, Tamil Nadu.
- Dr.P. Murthi Acted as Ph.D thesis Evaluator and Oral Examination board • Member as Indian Examiner in other State Universities – 2 Thesis

P.Murthi				
Date	Title	Institution		
18.05.2020	Prefabricated Structures	SNS College of Engineering (Autonomous),		
		Coimbatore, Tamil Nadu		
05.06.2020	Prefabricated construction -	Kongu Engineering College (Autonomous),		
	Overview	Erode, Tamil Nadu		
18.07.2020	Modern Construction Methods - a	Adhi College of Engineering and Technology,		
	futuristic approach	Chennai, , Tamil Nadu		
27.08.2020	Future perspective of lightweight	KPR Institute of Engineering and Technology,		
	concrete	Coimbatore, Tamil Nadu		
31.12.2020	Emerging Technologies in	Dr. N.G.P. Institute of Technology,		
	Construction Industry	Coimbatore		

#### D Maralle







## BOOK PUBLISHED

• Green building Design, Publisher: The Charulatha Publications, West Mambalam, Chennai

## Ph.D GUIDING

S. No.	Thesis Title	Scholar Name	Supervisor
1.	Retrofitting of RCC Columns with High	Manisha B.	Dr.P.Murthi
	Aspect Ratio	Shewale	
2.	Behaviour of Egg-shell Powder blended	Velpula	Dr.P.Murthi
	Fibre reinforced Pavement Quality Concrete	Lavanya	
3.	Performance Evaluation of sustainable	B.Ashritha	Dr.K.Rajesh
	precast slab panel using S.C.C. with septage		Kumar
	ash and plastic fibres		
4.	Experimental studies on Asphalt by using	N.Prabhanjan	Dr.K.Rajesh
	Septage and hybrid fibre.		Kumar
5.	AI applications in geotechnical engineering	Ashwini	Dr.R.Gobinath
6.	AI applications in construction management	K. Pawan	Dr.R.Gobinath
		Kumar Mohan	
7.	Sustainable building materials	Shinde Nitin N	Dr.R.Gobinath

## JOURNAL REVIEWER

## Dr.P.Murthi

- 1. Materials Today: Proceedings (An Elsevier Journal)
- 2. International Journal of Engineering and Technology
- 3. MDPI Journal of Buildings



