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DEPARTMENT OF CIVIL ENGINEERING

presents

CIVLIZATION

VISION

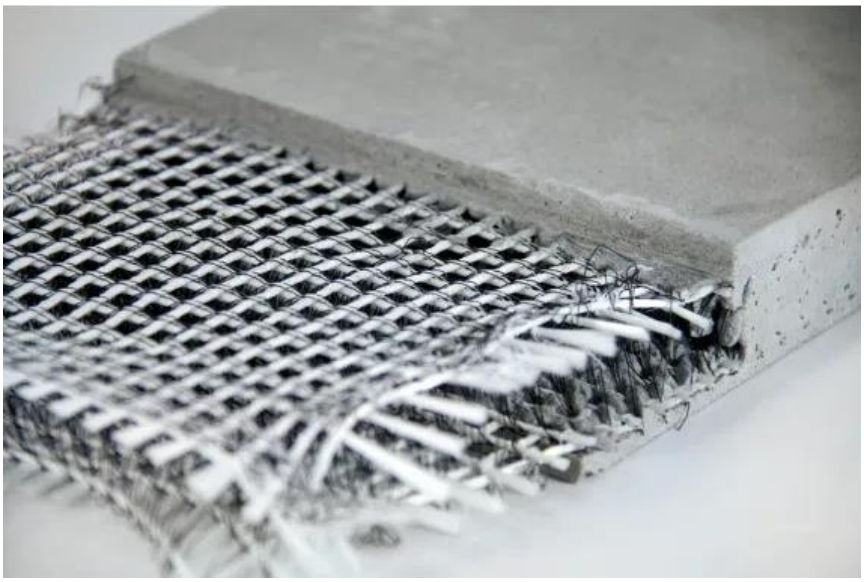
- *To be a Department imparting knowledge in Civil Engineering Education, Research, Entrepreneurship and Industry outreach services for creating sustainable infrastructure and enhancing the quality of Life with professional and ethical values.*

MISSION

- *To provide an effective learning environment enabling to be a competent Civil Engineer.*
- *To motivate Research and Entrepreneurial initiatives in the field of Civil Engineering.*
- *To inculcate ethical values to serve the society with high order Professionalism.*

Textile-Reinforced Concrete

Textile-reinforced concrete (TRC) or fabric-reinforced cementitious matrix (FRCM) is a composite concrete material that employs textile reinforcement instead of steel reinforcement. TRC is being widely used in construction for the past two decades and is a promising solution for retrofitting and strengthening concrete structures.



Textile Reinforcement in Concrete

The fabrics or textiles used for TRC are jute, glass, fiber, Kevlar, polyamides, nylon etc.

Features of Textile-Reinforced Concrete

Tensile-reinforced concrete produces structures that are thin and malleable in nature. They have the ability to retain the high tensile strength of concrete.

The textile mesh used for reinforcement must be open enough to allow concrete to pass through it during the concrete pouring process. The placement of the reinforcement also plays an important role in providing final strength to the concrete.

The TRC material used must have high elongation before breaking, high tensile strength and a modulus of elasticity higher than the concrete matrix surrounding it.

Structure and Composition of Textile-Reinforced Concrete

Textile-reinforced concrete is composed of high-strength fibers which are in the form of textiles. It possesses an open-mesh configuration, with inorganic matrices like cement or hydraulic-lime-based mortars. The composite material employs a fine concrete matrix and a high-performance fiber material. Some of the top fabric materials used for TRC are alkali-resistant (AR) glass or basalt.

The textile mesh reinforcement for concrete consists of fiber rovings that are arranged in two or more directions. These fiber rovings are spaced and arranged to form a mesh. These perforations between the fiber rovings enable mechanical interlocking between the concrete matrix and the reinforcement. These textiles are available with a coating. Coated textile reinforcement improves the stability of the textile reinforcement and the mechanical interlocking with the matrix. Coated textiles are stiffer, like steel fabrics, but cannot be used in complex geometries.

Textiles Used in Textile-Reinforced Concrete Systems

The commercially available mesh size of most common non-metallic textiles for concrete strengthening application varies between 8 and 30 mm. They weigh between 150 to 600 g/m2. The weight of the textile mesh varies with the type of material.

a b c d c

Textile Fiber Reinforcement: (a) carbon fiber textile;(b) glass fiber textile; (c) basalt fiber textile;(d) Polyphenylene benzobisoxazole (PBO) fiber textile; and (e)steel fiber textile.

The fabric fibers unite with the mortar for achieving a good bond. The mortar or the concrete mix used for TRC must have sufficient plastic consistency, low viscosity, good workability, and sufficient shear strength to achieve this bond. So, mostly cement-based matrix is most commonly used for TRC systems.

Applications of Textile-Reinforced Concrete (TRC)

- Construction of bridges, pillars, and road guards using Kevlar or jute reinforced concrete to withstand sudden jerks and vibrations.
- TRC can be used to reinforce and repair existing structures.
- TRC is used as a protective layer for old structures or retrofit elements due to its corrosion resistance property.
- TRC using carbon fiber helps to heat buildings. Carbon fiber is conductive in nature.

By B. SANJAY AKASH

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IV YEAR CIVIL B

DEPARTMENTAL ACTIVITIES

STUDENT ACTIVITIES

STUDENT ACHIEVEMENTS IN SPORTS

Sl. No.	Name of the Student	Year/Section	Name of the Sport	Prize Secured
1.	R. Ashwin Ram	III / A	Volley Ball	Third Place (AU-Zonal tournament)
2.	V. Nithish	III / B	Kho - Kho	Runner Up
3.	M. Ramakrishnan	IV / B	Ball Badminton	Runner Up
4.	S. V. Yogeshwar	IV / B		
5.	J. Dhayanand	IV / A		
6.	B. Deepak Krishnan	III / A		

OTHER STUDENT ACHIEVEMENTS

- **J. Govind Krishnan** of Final Year Civil A appeared & successfully qualified in **GATE'21 - Civil Engineering**. The exam was conducted by IIT Bombay.
- **J. Govind Krishnan** of Final Year Civil A appeared in **TANCET'21** & secured **95%** percentile score.
- **J. Govind Krishnan** of Final Year Civil A has qualified and was selected within top 8 positions for 2nd round in **Ultra Tech India Next STIMULUS Quiz** in south zone. The competition was conducted by **"Ultra Tech cement"** on 26th Feb '21 through online mode.

- **A. Naveen Aravind** of Final Year Civil B secured **82%** with grade **Silver + Elite** in NPTEL course on **Plastic Waste Management**.
- **B. V. Agaliya** of Final Year Civil B secured **77%** with grade **Silver + Elite** in NPTEL course on **Integrated Waste Management for a Smart City**.
- **B. V. Agaliya** of Final Year Civil B secured **72%** with grade **Elite** in NPTEL course on **Municipal Solid Waste Management**.
- **N. Shashank** of III Year Civil B attended a Webinar Series on **Challenges and the Future of Construction Materials in Civil Engineering Projects** organized by ASCE Texas Section on 12th Jan '21.

FACULTY ACCOMPLISHMENTS

RESEARCH PROPOSAL SUBMITTED

- **Dr. S. Geetha & Dr. M. Selvakumar** submitted a Research Proposal on **"Self - Sensing Multifunctional Cementitious Nanocomposite for Damage Assessment in Smart Structures"** to **DST – POWER** on 23rd January, 2021 for a funding of Rs. 49,62,080/-.

- **Dr. S. Geetha, Dr. M. Selvakumar & Mrs. S. Muthu Lakshmi** submitted a Research proposal on **"Development of Porous Geo Polymer Composite Water Treatment Nano Materials for Waste Water Treatment"** to **DST – SERB – CRG** on 28th Feb'21 for a budget of Rs.41,48,100/-.

JOURNAL PUBLICATION

- **Dr. M. Selvakumar, Dr. V. Prasannakumari, Dr. S. Geetha & Mrs. S. Muthu Lakshmi** published a Journal Paper titled "**Validation of Line Source Models for determining Industrial Pollution and Integrating with IoT for Vulnerability Management**", in IOP Conf. Series: Materials Science and Engineering, 1055 012022 (2021), IOP Publishing with doi:10.1088/1757-899X/1055/1/012022.

- **Dr. S. Geetha, Dr. M. Selvakumar & Mrs. S. Muthu Lakshmi** published a Journal Paper titled **"Characteristics of Polymer Modified Reclaimed Bitumen and Aggregate as Sustainable Pavement Material"**, in IOP Conf. Series: Materials Science and Engineering, 1055 (2021) 012019, IOP Publishing with doi:10.1088/1757- 899X/1055/1/012019.

- **Dr. M. Uma Maguesvari, Mr. P. Muthaiyan, Mrs. S. Yugasini & Mr. M. Ammaiappan** published a Journal Paper titled **"A Study of Fibre Reinforced Concrete using Sustainable Material"**, in IOP Conf. Series: Materials Science and Engineering, 1026 (2021) 012011, IOP Publishing with doi:10.1088/1757-899X/1026/1/012011.

- **Mrs. V. J. Vedhanayaghi, Mr. M. Manoharan, Mr. J. Jasper Daniel, Mr. S. Premkumar & Mr. S. Arunbharathi** published a Journal Paper titled **"An approach to derive seismic fragility curves"**, in IOP Conf. Series: Materials Science and Engineering, 1026 (2021) 012007, IOP Publishing with doi 10.1088/1757- 899X/1026/1/012007.

- A Journal Paper titled **"Partial Replacement of Cement by Ground Granulated Blast Furnace Slag in Concrete"**, by **Mrs. A. J. JeyaArthi, Mrs.**

M. Hemavathy & Mrs. M. Goutham Priya has been published online in Jan'21 in Palarch's Journal of Archaeology of Egypt/Egyptology, Vol. 17, No.7 (Impact Factor - 0.2).

- A Journal Paper titled **"Strength enhancement of Clayey Sand subgrade using lime and rice husk ash"** by **Mrs. S. Muthu Lakshmi, Dr. S. Geetha, Dr. M. Selvakumar & Mrs. K. Divya Susanna** has been published online in Materials Today: Proceedings, Elsevier with doi: https://doi.org/10.1016/j.matpr.2021.01.0 39.

- A Journal Paper titled **"Eco Bricks from Industrial Wastes such as Tannery Sludge and Sugarcane Bagasse Ash"**, Rose Enid Teresa A, Uma Maguesvari M, Yugasini S and Muthaiyan P, has been published in IOP Conf. Series: Materials Science and Engineering, 1126 (2021) 012076, 1126 (2021) 012076.

CONFERENCE PAPER PUBLICATION

- **Dr. M. Selvakumar, Dr. S. Geetha & Mrs. S. Muthu Lakshmi** presented a conference paper titled **"Strength Properties of Aerated Cement Composite Reinforced with Steel Fibres"** in the 3rd International Conference on Materials, Manufacturing and Modelling (ICMMM-2021) organized online by VIT, Vellore from 19th to 21st March'21.

- **Mrs. S. Muthu Lakshmi, Dr. S. Geetha, Dr. M. Selvakumar & K. Divya Susanna** presented a conference paper titled **"Strength Enhancement of Clayey Sand Subgrade using Lime and Rice Husk Ash"** in the 3rd International Conference on Materials, Manufacturing and Modelling (ICMMM–2021) organized online by VIT, Vellore from 19th to 21st March'21.

- **Dr. M. Selvakumar & Dr. S. Geetha** along with Final Year Civil B Students **B. V. Agaliya, S. Shine, R. U. Rupasudharshnee** presented a conference paper titled **"Study on Properties of Polymer Mortar with Foundry Sand"** in the International Conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2021) organized online by SSN College of Engineering on 19th and 20th March '21.

- **Dr. M. Selvakumar & Dr. S. Geetha** along with Final Year Civil B Students **Christina Joby Maria, S. Pavithra, S. Rakesh, K. Udhaya** presented a conference paper titled **"Use of RMC Wastewater in Concrete with Admixtures for Strength Enhancement"** in the International Conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2021) organized online by SSN College of Engineering on 19th and 20th March'21.

- **Mrs. V. J. Vedhanayaghi, Mr. S. Arun Bharathi & Mrs. S. Muthu Lakshmi** presented a conference paper titled **"Experimental Study on Alternative Material for Conventional Fine and Coarse Aggregate in Concrete"** in the International Conference on Sustainable Practices and Innovations in Civil Engineering (SPICE 2021) organized online by SSN College of Engineering on 19th and 20th March'21.

- Dr Rose Enid Teresa A, Dr Uma Maguesvari M, Mrs Yugasini S and Mr Muthaiyan P, presented a conference paper titled **"Eco Bricks from Industrial Wastes such as Tannery Sludge and Sugarcane Bagasse Ash"** in the 3rd International Conference on Trends in Material Science and Inventive Materials (ICTMIM 2021) organised by JCT College of Engineering and Technology, on **12-13 March** 2021.

WORKSHOP CONDUCTED

- **Dr. M. Selvakumar & Dr. S. Geetha** conducted a Workshop on **"Prototype Development"** from 18th to 20th March'21 in association with IIC and CSRC in the Sustainable Construction Materials Research Lab for II Year and III Year Civil Engineering Students of REC.

TECHNICAL WEBINARS

ORGANIZED BY THE DEPARTMENT

- One-day Mentoring Session on the topic "**How to plan for Start-up and Legal & Ethical Steps"** by **Mr. V. M. Deepak, Managing Director, Rajkumaran Builders** was organized by the Department of Civil Engineering in association with Indian Concrete Institute (ICI) & Institution's Innovation Council (IIC). The Webinar was conducted on 24th March'21 at 12.30 p.m. for our Final Year Civil Engineering Students.
- One-day Interactive Session on the topic **"From BEING to BECOMING – An Interaction with a Successful Entrepreneur"** by **Mr. M. S. Anuman Surya, Marketing and Project Coordinator, SPEC** was organized by the Department of Civil Engineering in association with Indian Concrete Institute (ICI) & Institution's Innovation Council (IIC). The Webinar was conducted on 25th March'21 at 2.30 p.m. for our III Year & Final Year Civil Engineering Students.

OTHER ACHIEVEMENTS

- **Dr. M. Selvakumar & Dr. S. Geetha** have taken up a **Consultancy Work** with **Sakthi Foundries, Tirupur** for Waste Water Treatment and Use of Foundry Sand as Sustainable Construction Material.
- **Dr. M. Selvakumar & Dr. S. Geetha** have done **Consultancy Work** for **PWD-Krishna Water Supply Project** on Mix Design, Material testing and Water testing for **Rs. 20,000/-.**

- **Dr. S. Geetha & Dr. M. Selvakumar** received the second year funding of **Rs. 7, 70,889/-** towards the on-going **DST-WMT Research Project** titled **"Grinding waste from Automobile Industry as Sustainable Construction Material".**
- **Dr. S. Geetha** was invited as an **Academic Stakeholder** for the panel discussion of a research project meeting of **CSIR-SERC** for the research proposal "Prediction of crack initiation and remaining life of structural components" conducted on 10th February'21.
- **Dr. S. Geetha** was invited as a **Resource Person** for **AICTE Margdarshan FDP** conducted at **GRT Institute of Engineering & Technology** on 4th and 5th Feb'21 and at **Meenakshi Sundararajan Engineering College** on 6th Feb'21. She delivered lectures on **"Course outcomes and mapping with POs and PSOs".**
- **Dr. M. Selvakumar** secured **81%** with grade **Elite + Silver** in NPTEL course **Plastic Waste Management**.
- **Dr. S. Geetha** secured **77%** with grade **Elite + Silver** in NPTEL course **Development and Applications of Special Concrete**.
- **Mrs. S. Yugasini** secured **67%** (**Elite Grade**) and **61%** (**Elite Grade**) in NPTEL courses **Water Supply Engineering and Project Planning & Control** respectively.
- **Mr. M. Ammaiappan** appeared & successfully qualified in **GATE'21 - Civil Engineering**.
- **Mr. M. Ammaiappan** appeared in **TANCET'21** & secured **93 % percentile** score.
- **Mr. M. Ammaiappan** has been awarded Cash Prize for securing **91%** Marks (**9th Rank**) in **National Engineering Olympiad 2020** conducted by ASSOCHAM.
- **Mr. P. Muthaiyan** appeared in **TANCET'21** & secured **96 % percentile** score.

FACULTY PARTICIPATION IN ONLINE WEBINAR / FDP / WORKSHOP

Sl. No.	Name of the Faculty Member	Course Title	Organized by	Event	Date
1.	Dr. M. Uma Maguesvari	Conservation of Energy and Environment Through Sustainability Engineering	Mepco Schlenk Engineering College, Sivakasi	STTP	04.01.2021 to 09.01.2021
2.	Mrs. V. J. Vedhanayaghi	Sustainable Materials & Resilient Buildings- Philosophy, Design, Implementation, and Performance	Kakatiya Institute of Technology and Science, Warangal	AICTE - STTP	04.01.2021 to 09.01.2021
3.	Dr. M. Selvakumar	Sustainable Materials & Resilient Buildings - Philosophy, Design, Implementation, and Performance	Kakatiya Institute of Technology & Science, Warangal	AICTE – STTP	15.02.2021 to 20.02.2021
4.	Dr. S. Geetha	Sustainable Materials & Resilient Buildings - Philosophy, Design, Implementation, and Performance	Kakatiya Institute of Technology & Science, Warangal	AICTE – STTP	15.02.2021 to 20.02.2021
5.	Mr. M. Manoharan	Program on Primavera Software	ICT Academy	Virtual FDP	22.03.2021 to 26.03.2021

EDITORIAL BOARD MEMBERS

STAFF INCHARGE

Mrs. S. Muthu Lakshmi / AP(SG)

STUDENT INCHARGES

M. J. Satish Anand (IV/B)

F. Aadil Nazir Hussain (IV/A)

A. S. Dawn Adaikaladass (III/A)

G. Yogashree (III/B)