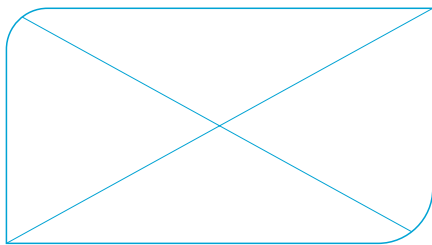


funding for UG, PG and Ph.D students. The chief guest Dr V Karthikeyan, Principal, Thiagarajar Polytechnic College, and Salem gave inaugural address and appreciated the conduction of seminar so that the industries can find their way to dispose of industrial by products. This is the only possible way to save the agricultural land from becoming infertile. The seminar proceedings were released by the chief guest. Er S Loganathan, The Secretary, IEL Salem Local Centre, Salem showed his gratitude for the management, faculty members, students and participants for supporting in organizing such seminar.



Souvenir released by the dignitaries



Inaugural Address by Dr V Karthikeyan, Principal/Thiagarajar Polytechnic College, Salem

On day one, Keynote Session 1is Flyash Aggregates in Concrete- Dr K Jagadeesan, Professor and Dean (PG), SCT, Salem. Keynote Session 2is Sustainable Construction using Industrial Waste by products – Dr R N Krishna, Proprietor, KC Contech, Chennai. Keynote Session 3is Utilisation of industrial wastes for sustainable development- Dr S Lavanya Prabha, HoD/Easwari Engineering College, Chennai. Keynote Session 4is Environmental impact of slurry generated from granite cutting and polishing industry by Dr S Jothi Venkatraman, Assistant Engineer, Pollution Control Board, Erode.

On second day, Keynote Session 1is Red mud-fly ash geocrete application for sustainability by Er R V Ramani, CEO, ARGUSD Concrete Solutions, Llc, USA/India. Keynote Session 2is Artificial Aggregates by Dr T Palanisamy, Assistant Professor, NIT Karnataka, Surathkal. Keynote Session 3is Utilisation of copper slag in concrete by Dr T Ch Madhavi, HoD/Civil, SRM Institute of Science and Technology, Chennai. Certificate distribution was made for the participants presented the paper and participated. Vote of thanks was proposed by Prof N Savitha, Organising Sercretary during valedictory ceremony.

ACHIEVEMENTS

1. Wrestling(free style and Greco roman style)- **Gold Medal**
2. State senior (men&women) wrestling championship - **Gold Medal**
3. Under 23 wrestling selection trial 2018 - **Selection process**
4. All India wrestling under 23 championship 2018 - **participation**

K.Thangarasu
B.E /III year/CIVIL

NPTEL TOPPERS LIST (FACULTY)

FACULTY TOPPERS LIST			
NAME	COURSE COMPLETED IN NPTEL	SCORE %	CATEGORY
Dr R.Malathy	Electronic waste management-Issues and Challenges	94	Elite & gold category
S.Kalaiselvi	Electronic waste management-Issues and Challenges	90	Elite & gold category
J.Jenifar monica	Electronic waste management-Issues and Challenges	96	Elite, gold category & secured top 1% in the course
M.Deepika	Plastic waste management	90	Elite & gold category
Dr. Gulshan Taj M.N.A	Introduction to internet of things	96	Elite & gold category

STUDENT TOPPERS LIST			
TARA CHANDRA PANJIYAR	Electronic Waste Management– Issues And Challenges	90	Elite & gold category
V.AKHILANDESWARI	Introduction To Remote Sensing	96	Elite & gold category
K.KAVINMATHI	Introduction To Remote Sensing	93	Elite & gold category
BIJAY KHANAL	Plastic Waste Management	96	Elite & gold category



Convenor : Dr. R. Malathy, Ph.D.
Dean(R&D), HoD/Civil
Co-ordinator: Prof. M. Arivoli
Chairman: M. Vanmathi
Secretary: R. Srihari
Joint Secretary: S. Anand
Treasurer: A. Rasheeda Fathima
Office Bearers
K.Kaviya | Janani Paranthaman | S.Monisha | A.Ravidass | L.M.Mustaffa | M.Nandhini | DHA.Mythra | M.Jeyashri
A.P.Nithyanandhan | P.Kavina
A.Haneefi | R.P.Kanishka

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

To enable the students,

PEO 1: To perform their/duties efficiently, effectively and ethically at individual level and also at group level in a multidisciplinary team, contributing to the welfare of the society.

PEO 2: To analyze data and technical concepts pertaining to the development of infrastructure, design, sustainability, construction management and any other related field of civil engineering.

PEO 3: To adopt new innovative technology by continuously updating their knowledge through life-long learning achieving personal and organizational growth.



ICI STUDENTS CHAPTER COORDINATOR MESSAGE

M. ARIVOLI

AP/ CIVIL | ICI Students Chapter Coordinator

To become a school of excellence that brings out civil engineers with high technical competencies and promotes high-end research to meet the current and future challenges in civil engineering.

VISION & MISSION OF THE DEPARTMENT

- MD1** : To offer Under-Graduate, and Post-Graduate programmes in civil engineering and other skill development courses that adds value to student competencies
- MD2** : To promote quality education, research and consultancy for industrial and societal needs
- MD3** : To inculcate moral and ethical values among the students
- MD4** : To impart knowledge with emphasis on the development of leadership qualities in students
- MD5** : To provide state-of-the-art resources that contribute to a congenial learning environment
- MD6** : To encourage students to pursue higher education and take competitive exams and various career enhancing courses.
- MD7** : To establish centres of excellence in emerging areas of research
- MD8** : To have regular interaction with industry and offer solutions to their problems.

DEPARTMENT OF CIVIL ENGINEERING

Dr. S.R.R. SENTHIL KUMAR
Principal

Sustainable development is the pathway to the future we want for all and the one human community striving to achieve. It offers a framework where in contribution of industry and academia should intersperse and discover solutions with the aid of modern tools and applications. SONA CREA is one such technical forum wherein advanced tools and techniques pertain to Civil Engineering for sustainable development is discussed in infinite perspective. With decidedly informative and state-of-the-art information, I believe this newsletter will enlighten the minds of young Civil Engineers to work together towards greater accomplishments. It's my privilege to wish the team of SONA CREA for coming up with such potential information and acting as platform for the future Civil Engineers.

I am exhilarated in establishing the thirteenth issue of the magazine "SONACREA" of our Civil Engineering Department, which is a reference of the most recent trends and activities in construction field. This magazine should be good source of guidance for faculty and coming batches of students in choosing activities of their choice in their future for building their careers.

I appreciate the efforts of the editorial team who have done an excellent job in compiling activities over the semester and disseminate them through this magazine as well as on the website. I am glad to welcome students with more interest in bringing the article with more bright concepts and innovative ideas in the next issue. I wish them to experience victory in all of their future endeavors.



HOD'S MESSAGE

Dr. R. MALATHY

HoD / Civil
Convenor/ ICI Student Chapter

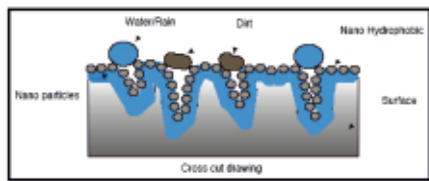
It is really happy that SONACREA has reached its 14th issue. The special thing about the newsletter is that it brings out the student's article on various verticals like self-healing concrete and roller-compacted concrete. This newsletter also gives essence of events organized in the Civil Engineering department. I am sure that this newsletter will provide an opportunity to all students to build their knowledge and help in sharing best practices for improving quality of the newsletter and its delivery to the student at large. I thank faculty and students for their support in bringing out this newsletter.

NANO MATERIALS IN CIVIL ENGG.

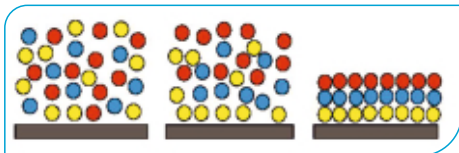
Nanotechnology is the engineering of functional systems at the molecular scale. Nanotechnology is concerned with objects between 1 and 100nm in size. (Nano meter) 1 Nanometer – 1×10^{-9} m. Applications of nano technology in civil engineering are numerous. Anti-static effect due to the strong reduction of surface tension.



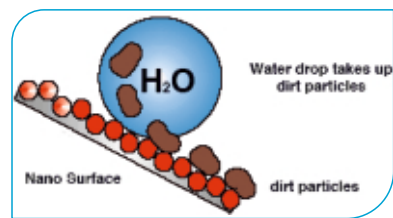
Dr. M.N.A. Gulshan Taj
Associate Professor/CIVIL



The NanoCoat Polish particles self-assemble into the right position after being applied to the surface:



Red particles = Repellent/deflecting;
Blue: adhesive particles; Yellow: Mesh creating particles

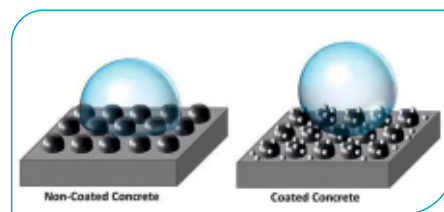


The NanoCoat is very tough due to the extremely strong mesh structure (yellow) which adheres to the substrate (molecular bonding). Only mechanical wear and tear will reduce the coating's life expectancy. In reality, nano coatings have a life expectancy of 4-12 month depending on position and environment. NanoCoat Polish has a typical life expectancy of 6-12 month depending on the surface treated and environmental conditions.

Some of the applications are elaborated below.

Application in concrete

Addition of nanoscale materials into cement could improve its performance. Use of nano-SiO₂ could significantly increase the compressive for concrete, containing large volume fly ash, at early age and improve pore size distribution by filling the pores between large fly ash and cement particles at nanoscale. The dispersion/slurry of amorphous nanosilica is used to improve segregation resistance for self-compacting concrete. It has also been reported that adding small amount of carbonnanotube (1%) by weight could increase both compressive and flexural strength. Cracking is a major concern for many structures. University of Illinois Urbana-Champaign is working on healing polymers, which include a microencapsulated healing agent and a catalytic chemical trigger. When the microcapsules are broken by a crack, the healing agent is released into the crack and contact with the catalyst. The polymerization happens and bond the crack faces. The self-healing polymer could be especially applicable to fix the microcracking in bridge piers and columns. But it requires costly epoxy injection.



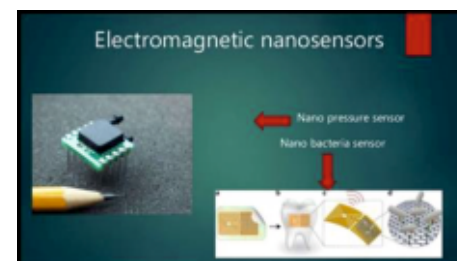
Application in Steel

Steel is a major construction material. Its properties, such as strength, corrosion resistance, and weld ability, are very important for the design and construction. It is possible to develop new, low carbon, high performance steel (HPS). The new steel was developed with higher corrosion-resistance and weld ability

by incorporating copper nanoparticles from at the steel grain boundaries.

Coating

The coatings incorporating certain nanoparticles or nanolayers have been developed for certain purpose. It is one of the major applications of nanotechnology in construction. For example, TiO₂ is used to coat glazing because of its sterilizing and anti-fouling properties. The TiO₂ will break down and disintegrate organic dirt through powerful catalytic reaction. Furthermore, it is hydrophilic, which allow the water to spread evenly over the surface and wash away dirt previously broken down. Other special coatings also have been developed, such as anti-fraffiti, thermal control, energy saving, and antireflection coating.



Nano sensors

Sensors have been developed and used in construction to monitor and/or control the environment condition and the materials/structure performance. One advantage of these sensors is their dimension (10⁻⁹m to 10⁻⁵m). These sensors could be embedded into the structure during the construction process. Smart aggregate, a low cost piezoceramic-based multi-functional device, has been applied to monitor early age concrete properties such as moisture, temperature, relative humidity and early age strength development. The sensors can also be used to monitor concrete corrosion and cracking. The smart aggregate can also be used for structure health monitoring. The disclosed system can monitor internal stresses, cracks and other physical forces in the structures

during the structures' life. It is capable of providing an early indication of the health of the structure before a failure of the structure can occur.

REVIEW ON EFFECTIVE UTILIZATION OF CONSTRUCTION AND DEMOLITION (C&D) WASTE IN CONCRETE

Introduction

Over the years there has been a change in the use of building materials. Cheap and locally available materials such as molded earth bricks, stones, thatch, timber, steel, aluminum, plastics and fibers of various types and forms have replaced the traditional and costly materials.



S. Kavyaa
III - BE (Civil)

However, all these materials have been developed to meet specific requirements of climate, availability of skilled labor and specific raw materials to affect the desired economy. Construction and demolition waste (CDW) is authentic as waste which is produced from construction, acclimation and annihilation activities including damaged articles and abstracts arising from construction works. Construction area is one of the biggest waste ambassadors worldwide. Landfill is the best cheapest and acceptable auctioning adjustment for C&D wastes, but in accordance with the absolute amazing pressures on landfill area, recycling should be the capital focus for the waste management. Waste appliance and administration involves Eco affable and socially favorable way. Usage of C&D waste in production industry is a brand-new innovative practice. Use of C&D waste concrete will sell and inspire green construction for sustainable traits. Use of C&D waste fabric will lower the power inside the buildings so as to lead them to greater energy efficient. Initially, recycling of annihilation waste was aboriginal agitated out afterwards the Second World War in Germany. Since then, analysis plan agitated out in several

countries has demonstrated acceptable affiance for developing use of construction waste as a basic in new concrete. Construction and annihilation (C&D) waste could be torn concrete, bricks from buildings, or torn pavement. Thus, Recycled Aggregate (RA) could appear from the demolition of buildings, arch supports, airport runways, and accurate roadbeds. Concrete made application such aggregates are referred to as recycled accumulated accurate (RAC).

Management of Construction and Demolition Wastes

- Briefly rules and guidelines are mentioned–
- Proper planning to construction new one and to annihilate old ones.
- Location and association akin storage.
- Proper guidelines for agreement on accessible roads
- Transportation and processing of C&D waste.
- Appliance of processing residues.
- Applied use of C&D waste.
- Cost accretion and acknowledgment from pilot projects for administration of C&D waste.

Characteristics

This category of waste is complex due to the different types of building materials being used but in general may comprise the following materials:

Major components

- Cement concrete
- Bricks
- Cement plaster
- Steel (from RCC, door/window frames, roofing support, railings of staircase etc.)
- Rubble
- Stone (marble, granite, sand stone)
 - Timber/wood (especially demolition of old buildings)

Minor components

- Conduits (iron, plastic)
- Pipes (GI, iron, plastic)
- Electrical fixtures (copper/aluminium wiring, wooden baton, bakelite / plastic switches, wire insulation)
- Panels (wooden, laminated) ,Others (glazed tiles, glass panes)

Storage of Construction and Demolition Waste

These wastes are best stored at source, i.e., at the point of generation. If they are scattered around or thrown on the road, they not only cause obstruction to traffic but also add to the workload of the local body. All attempts should be made to stick to the following measures:

- All construction/demolition waste should be stored within the site itself. A proper screen should be provided so that the waste does not get scattered and does not become an eyesore. Attempts should be made to keep the waste segregated into different heaps as far as possible so that their further gradation and reuse is facilitated.
- Material, which can be reused at the same site for the purpose of construction, levelling, making road/pavement etc. should also be kept in separate heaps from those, which are to be sold or land filled.
- The local body or a private company may arrange to provide appropriate number of skip containers/trolleys on hire which may be parked at the site and removed with skip lifters or tractors as the case may be.
- Whenever a new streamlined system is introduced in a municipality, the local body may consider using its old vehicles, especially, tractors and trailers or old lorries or tippers for this purpose.
- For large projects involving construction of bridges, flyovers, subways etc., special provision should be made for storage of waste material. Depending on the storage capacity, movement of the waste has to be planned accordingly. Otherwise, it would result in job constraint as well as traffic bottlenecks.
- This subject is often neglected in case of repair/maintenance of roads, water pipes, underground telephone and electric cables etc. It is not uncommon to see that after such

work, the waste remains piled for months on the roads or pavements. The concerned departments and contractors must co-ordinate with the municipality for removal of the debris generated. The municipality while giving permission for such work should clearly sort out the issue of removal of the debris and should insist that immediately after the job is over, the road should be repaired and brought back to its normal shape.

Recycling and Reuse

The use of these materials basically depends on their separation and condition of the separated material. A majority of these materials are durable and therefore, have a high potential of reuse. It would, however, be desirable to have quality standards for the recycled materials. Construction and demolition waste can be used in the following manner: Reuse (at site) of bricks, stone slabs, timber, conduits, piping railings etc. to the extent possible and depending upon their condition.

Disposal

Being predominantly inert in nature, construction and demolition waste does not create chemical or biochemical pollution. Hence maximum effort should be made to reuse and recycle them. The material can be used for filling/leveling of low-lying areas. In the industrialized countries, special landfills are sometimes created for inert waste, which are normally located in abandoned mines and quarries. The same can be attempted in our country also for cities, which are located near open mining quarries or mines where normally sand is used as the filling material. However, proper sampling of the material for its physical and chemical characteristics has to be done for evaluating its use under the given circumstances.

Innovative Steps To Reduce And Reuse Wastes

Waste prevention: Total amount is reduced, as the construction abstracts to

be acquired are in baby abundance and there is beneath wastes to be removed from the site. Assuring able spaces to abundance and administration of construction abstracts to abbreviate assembly of burst materials/waste i.e.; advancement abstracts appropriately until they are accessible to be utilized. Implementing able arrangement of activities. Reuse of recycled waste: Recycled material, if cannot be acclimated immediately, should be managed in such a way that it's reclaim should be ensured in approaching projects. Recycled abstracts be acutely defined which can be reused or can be reutilized afterwards their advantageous aeon of activity in the building. Special accoutrement or techniques should be activated for reusing in construction of absolute structures on agnate site.

Conclusion

Production of construction and annihilation waste is not approved like borough solid waste. Authorities should construct a plan by which nominal accuse can be imposed on the agencies bearing construction and annihilation waste. As this breadth is new one in India, accelerated efforts are appropriate for marketing the recycled articles and to body assurance amidst consumers. IS 456 or IRC112 do not admittance applications of construction and annihilation waste abstracts added than those acquired from accustomed sources. Looking at all-embracing advancements and experimentations there is huge curtailment of aggregates from accustomed sources beyond the country and it is time that recycled abstracts acquired from construction and annihilation waste should be acceptable for reclaim in accurate constructions. An ample framework is appropriate based on which acceptable blueprint can be fatigued up by. Framework of able guidelines and rules should animate able reprocessing, recycling and reclaim of aggregates acquired from waste materials.

SCREENING OF FUNGI FOR POTENTIAL APPLICATIONS OF SELF-HEALING CONCRETE

Introduction

Concrete is susceptible to cracking owing to drying shrinkage, freeze-thaw cycles, delayed ettringite formation, reinforcement corrosion, creep and fatigue, etc.



Monisha.S
III - BE (Civil)

Continuous inspection and maintenance of concrete infrastructure require onerous labor and high costs. If the damaging cracks can heal by themselves without any human interference or intervention, that could be of great attraction. In this fungi are applied to heal cracks in concrete by promoting calcium carbonate precipitation. The goal of this investigation is to discover the most appropriate species of fungi for the application of biogenic crack repair.

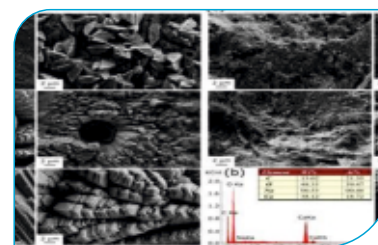


In particular, concrete infrastructure suffers from serious deterioration owing to the effect of various physical and chemical phenomena, such as drying shrinkage, freeze-thaw cycles, reinforcement corrosion, creep and fatigue, and delayed ettringite formation, all of which could lead to concrete cracking. Nowadays, concrete has been the key construction material for reactor containment and biological shielding structures, which are essential components of the nuclear reactors in service worldwide for power generation. In addition, cementitious grouts, mortars, and concrete are also often used to provide shielding and encapsulation of various radioactive waste materials from military, research, and power generation applications.

Fungi-mediated Self-healing Concrete

Although the research on bacteria-mediated self-healing concrete indeed achieved a certain level of success, it still

suffers from serious limitations. So far, the viability of bacterial spores embedded in concrete is generally less than six months¹³, which is far from being practical considering the fact that the lifetime of concrete infrastructure can easily be fifty years or even a century. The detrimental environment of concrete, such as very high pH values, tiny pores, serious moisture deficit, varied temperatures, and limited nutrient availability, dramatically influences the microbial metabolic activities and makes bacteria and their spores susceptible to death. In addition, owing to the limited ability of bacteria to produce large amounts of CaCO₃, bacteria can only heal small cracks with crack widths less than 0.8 mm. Common fungi include yeasts, lichen-forming fungi, molds, and mushrooms, etc. Recent studies in geomycology demonstrated that certain species of fungi can play a central role in CaCO₃ precipitation^{24,25}, but those species have never been tested in the environment of concrete. In fact, the existing literature suggests that filamentous fungi have unique features to be used in various applications of biomineralization. For example, compared with other microbial groups, filamentous fungi exhibit higher surface-to-volume ratios, and therefore possess a larger fraction of organic substrates available for mineral precipitation.



When cracks appear and water trickles into the concrete, the dormant fungal spores will wake up, grow, consume the nutrient soup, and promote CaCO₃ precipitates to fix the cracks in situ. After the cracks are finally healed, the bacteria or

fungi will make spores and go dormant once more ready to start a new cycle of self-healing when cracks form again. For existing concrete infrastructures with cracks, the fungal spores and their nutrients can be injected or sprayed into the cracks. Besides wild-type fungal strains, genetically engineered fungi are also important candidates for self-healing concrete. Since the extremely high pH of the concrete environment can be handled by only a few fungi, pH regulatory mutants are used.

Materials And Methods

The spores of a wild-type *Trichoderma reesei* germinated into hyphal mycelium on concrete plates and grew well. However, there exist only a few studies on the pH regulation of *T. reesei*. In filamentous fungi, the best characterized member for gene regulation by ambient pH is *Aspergillus nidulans*⁴⁴. Therefore, gene manipulations are easily achievable in *A. nidulans*. In this study, three different types of alkalinity-mimicking mutants of *A. nidulans*, i.e., MAD1445, MAD0305, and MAD0306, will be tested. In addition to filamentous fungi, there are also single-celled fungi, i.e., yeasts, which do not form hyphae. One of the most well-known species of yeast is *Saccharomyces cerevisiae*, also called baker's yeast, as it has been instrumental to winemaking, baking, and brewing since ancient times. SEM has been used to visualize fungal precipitates and TEM has been used to study fungal-biotite interfaces and weathered alkali feldspars. SEM will be applied to analyze the morphology and composition of the fungal precipitates, which will complement the very local characterization by TEM. In this section, the experimental procedures of gene replacement to obtain alkalinity-mimicking mutations, survival test of fungi on concrete plates, as well as phase identification and microscopic characterization of fungal precipitates will be presented.

Embedment Of Fungal Healing Agents In Concrete

If the fungal spores are larger than the pore sizes in concrete, if they are directly put into cement paste, most spores will be crushed and lost viability during the

hydration process. Air-entraining agents could be applied to generate plentiful additional tiny air bubbles in concrete matrix to provide the housing for the healing agents. Although the specimen without air-entraining agents may also contain a small number of inhomogeneous air voids, the specimen containing air-entraining agents usually shows a large number of homogeneous air voids with appropriate size, which is more beneficial for both workability and durability of concrete.

Conclusion

Concrete is considered as an extreme environment for fungi mainly due to its high pH values. To use fungi to heal cracks in concrete, the first step, which is also the most critical step, is to find the fungi strains which can survive the harsh environment of concrete and can promote calcium carbonate precipitation. The characterization by XRD, SEM, and TEM confirmed that the precipitates promoted by fungal activities were mainly composed of calcite. It is important to note that according to the existing literature, *A. nidulans* is usually considered relatively harmless to healthy human beings. Therefore, a complete assessment needs to be performed to examine the possible short-term and long-term adverse outcomes of *pacC* mutation of *A. nidulans* on both environment and human beings before it is used in concrete structures.

ROLLER COMPACTED CONCRETE (RCC)

Roller Compacted Concrete (RCC) is of great importance due to its advanced procedures which have been used for the past 25 years all over the world, as frequently being the most economical way to build safe dams.



Anand.S
III - BE (Civil)

Concrete is the second largest material consumed by human beings after food and water as per WHO.

RCC continues to gain recognition as a competitive material for building new and rehabilitating existing dams. RCC had been touted in engineering journals during the 1970s as a revolutionary material suitable for, among other things, dam construction. RCC has three key properties that make it uniquely suited for dams: economy, performance, and high-speed construction. American Concrete Institute (ACI) 207.5R-89 defines Roller Compacted Concrete (RCC) as concrete compacted by roller compaction.

In the quarter century since Willow Creek Dam, considerable research and experimentation have yielded innumerable improvements in concrete mix designs, dam designs and construction methods for roller-compacted concrete dams. Currently the highest dam of this type is Longtan Dam in China, at 216 m, with Diamer Basha Dam in Pakistan planned at 272 m. The repair of the collapsed intake tunnel of Tarbela Dam proved that the material had more adequate strength and durability.

The Water and Power Development Authority of Pakistan (WAPDA) intends to build number of new dams, hydropower projects in near future, those are based on Roller Compacted Concrete (RCC) Technology, a new field in Pakistan. WAPDA is interested to develop this in-house expertise for Diamer Basha Dam and other upcoming major RCC dam projects.

Central Material Testing Laboratory (CMTL), WAPDA is capable for carrying out testing activities in the field of Soil Mechanics, Concrete Section, Rock Mechanics, and Chemical Section. For the refurbishment and up-gradation of existing laboratory, WAPDA is trying to establish the testing facilities for Roller Compacted Concrete (RCC) with the same confidence and precision as typically done by internationally recognized authorities such as the U. S. Army Corps of Engineers and U.S. Bureau of Reclamation.

Diamer Bhasha dam with a height of 272 meters, cost of the US\$ 13.684 billion dollar would generate 4500 MW electricity and store over 8.1 Million Acre Feet of water to meet country's growing power and irrigation needs is being built on Indus river, about 315 kilometers upstream of Tarbela Dam. This world's highest concrete dam on River Indus would produce 19 billion units of electricity annually and enhance life of Tarbela Dam by over 35 years.

Roller compacted concrete (RCC) is an accepted method of constructing new and rehabilitating old dams. Dam safety modifications must be conducted rapidly to minimize disruption of reservoir operations and exposure to dam failure during construction. Depending on the complexity of the structure, RCC costs 25 to 50% less than conventional concrete. RCC can be placed in a short time frame, allowing the dam to resume normal operations quickly. This concrete methodology is economical because it can generate high-volume, high-speed construction and this is the main reason for designers to select RCC for new dam construction.

NEED BASED TRAINING FOR THE NON-TEACHING FACULTY MEMBERS

Department of Civil Engineering, Sona College of Technology, Salem, organized need based training for the non teaching faculty members of civil department between 4.12.2018 and 6.12.2018. As per their requirement, training was given in CADD Laboratory, Environmental Engineering Laboratory and Concrete and Highway Laboratory. Resource persons were from Department of Civil Engineering, Sona College of Technology, Salem. Prof.S.Thirumurugan gave training on 2D and 3D drafting of civil engineering drawings using the latest version of

Autocadd software. Prof.N.Savitha trained the non teaching faculty members to carry out tests on construction materials such as cement, fine aggregate and coarse aggregate. Training was also given on the usage of equipment like Compression testing machine, Flexure testing machine, Sieve shaker machine and Workability testing equipment. Prof.M.Deepika trained the participants in testing the various characteristics of water and waste water. At the end of each session, resource persons clarified the participants' doubts and participants gave their feedback about the session.



Prof. S. Thirumurugan giving training on 2D and 3D drafting

Faculty Training Programme on "MODERN METHODS OF TEACHING"

An initiative was taken by Sona College of Technology to establish Faculty Development Cell to train the faculty based on their requirements and also need of the hour. Through this Cell the first programme was organized, a one day faculty training programme for the faculty members on 08.12.2018 to enrich the faculty members with the modern methods of teaching and the strategies to be adopted in the classroom to achieve good results. The resource person for the programme was Mr. Raja Sreenivasan, Director of Rajshree Management Services, Techno-Commercial Consultant, Event Organisers, Chennai, who has an experience of more than 30 years. The programme was inaugurated in the presence of Dr. S. R. R. Senthil Kumar, Principal, SCT. Dr. R. Malathy, Incharge of FDC delivered the welcome address by briefing about the need of organizing this programme and the challenges

faced by the faculty to handle the students. The resource person started the session by speaking about the demands on teachers from the management as well as the students and parents. He briefly discussed about the responsibilities of teachers which was then followed by an activity session. The activity involved few faculty members discussing on the difficulty faced by the faculty with the students. It was found that some of the challenges are: retention of students in exam hall for 3 hours, non-utilisation of library by the students, etc., After which the role played by the parents was stressed upon. The observation from parent's side must also be supported to understand their views. Later, he asked the faculty members to do a self SWOT analysis and suggestions were given. In the afternoon session, the modern tools that can be used in teaching were briefly discussed by doing an activity, where the faculty members formed groups and each adopted a modern method and strategy to fulfill the needs of the students. Finally, he concluded saying that every student must be encouraged to submit a report every month on recent advancements in practice which would cultivate the habit of learning within them.



Welcome Address by Dr. R. Malathy



Interaction of Mr. Raja Sreenivasan with the faculty



Activity Session by the Prof. M. Vinoth



Participants of Faculty Training Programme

SEMINAR ON BACTERIAL CONCRETE

The Bacterial concrete seminar was presented by Dr.T.Palanisamy Assistant professor, Department of civil engineering from National Institute of Technology, Surathkal. This seminar was conducted by Sona College of technology in Salem.

The masters of structural engineering students, construction management students and final year civil engineering students were the students who were benefited and gained some knowledge regarding this presentation. He explained a lot about the innovative ideas in bacteria, utilized for concrete and how it will be useful for crack healing capacity. Regarding how to develop the compressive strength of concrete by *Bacillus pasteurii*, enterobacter, enterococcus, serratia we got idea about MICP Process to increase the strength of concrete. This presentation helps to know about the quantity of NBU [Nutrient Broth Medium] to be used in bacterial concrete. It provided a lot of information about the test to be conducted for the bacterial concrete.

By this way we found the relationship of biology connected to the construction field. We also got idea, how to search bacteria from our day to day life like in the starch of the rice. This motivates us to do a broad research regarding how for the bacteria will be useful for our civil field. Finally we got knowledge about how to publish a journal.

REPORT ON LIFE SKILLS

Life skill programme for students pursuing 2nd and 3rd year of BE Civil Engineering had been conducted by the

Department of Civil Engineering. The program was addressed by Prof.Dr.T.Ch.Madhavi, the Head of Civil Engineering Department from SRM Institution of Science and Technology.

The aim of the programme is to impart life skills training to the students to enhance their skills and personality and bring about a positive change in their behaviour and attitude. The sessions would focus on bringing awareness of social realities and challenges in the current academic system, apart from building the students' capacity to face problems and challenges related to academic endeavours, study skills and personality development. "If you put yourself in a position where you have to stretch outside your comfort zone, then you are forced to expand your consciousness".

The programme would also focus on enriching values of the ten core life skills ranging from self-awareness, empathy, interpersonal relationships to effective communication among the participants and developing leadership qualities. About 50 plus students were participated in the guest lecture and it had been arranged in APJ Abdul kalam hall on 28.12.2018.

Finally the students felt that the guest lecture was to build high energy in them to become physically fit, mentally positive and emotionally enthusiastic. It also enhances the effectiveness and efficiency in them which helps in ensuring optimum utilization of resources for executing an assigned task at workplace.



Prof. Dr. T. Ch. Madhavi, the Head of Civil Engg. Department from SRM Institution of Science and Technology address the gathering

SPECIAL LECTURE ON “SELECTION OF ECO-FRIENDLY CEMENTING MATERIALS –INDIAN AND INTERNATIONAL STANDARDS PERSPECTIVES”

A special lecture on “Selection of Eco-friendly cementing materials –Indian and International standards perspectives” and “Career opportunities through qualifying GATE” was given Dr.A.Bahurudeen, Assistant Professor, Department of Civil Engineering, BITS-Pilani, Hyderabad.

The former lecture leads the students to understand about the basics in concrete material, experimental procedures and the interpretations related to the experimental outcomes. The later lecture makes to understand the students about the importance and benefits of qualifying GATE examination and how to prepare for it.



Dr.A.Bahurudeen, Assistant Professor, Dept. of Civil Engg., BITS-Pilani, Hyderabad lecturing about basics in concrete material, experimental procedures

STRY LECTURE ON “INTRODUCTION TO RS and GIS OPPORTUNITIES FOR CIVIL ENGINEERS”

Industrial lecture was delivered to students on the topic of “INTRODUCTION TO RS, GIS AND OPPORTUNITIES FOR CIVIL ENGINEERS” on 01.2.19. The talk was arranged for Second year and M.E Civil engineering students in CV Raman Hall, from 3.00 P.M-4.00 P.M.

The resource person for the guest lecture was Sitansu B Pattnaik, Director, KCube Consultancy Services private Limited. Around 53 students attended the lecture along with 02 staff members.

The workshop is started with introduction of Chief Guest by Dr.Gulshan Taj, Associate Professor/Civil. At the initial talk, main focus is given on Introduction to GIS and different fundamental concepts prevail in GIS. Main focus is given on different government and private sector working in this GIS field. Few projects done by students in other colleges based on GIS software were shown with explanation. Many case studies like flood management in Uttarkhand and Orissa were discussed. He explained the role of GIS in predicting the flood management in both the states and explained the effectiveness of the tool. He also thrown lights on efficiency of construction projects with the aid of GIS tool. Traffic and accident management using GIS also shown with the practical example. Finally sum of application of GIS tool in various Civil Engineering application domains were briefed with practical case studies.

A student report on the talk stated that “Since all the concepts was taught with the help of practical examples, students motivated to take up some real time projects where they can apply the concept of RS and GIS effectively”.



Industry lecture on “RS and GIS and Opportunities in Civil Engineering” held on 01.02.19

GUEST LECTURE ON “APPLICATIONS OF IoT IN CIVIL ENGINEERING”

Industrial lecture was delivered to students on the topic of “APPLICATIONS OF IoT IN CIVIL ENGINEERING” on 06.2.19. The talk was arranged for Second year Civil (UG) and M.E Structural engineering students in Seminar Hall/Civil Department, from 10.00 A.M-11.00 A.M.

The resource person for the guest lecture was Mr. Selvaprasanth P, Assistant Professor, SNS college of

Technology, Coimbatore. Around 50 students attended the lecture along with 02 staff members. The workshop is started with introduction of Chief Guest by Dr.Gulshan Taj, Associate Professor/Civil. At the initial talk, main focus is given on Introduction to Internet of things and the four pillars of IoT. In order to kindle the curiosity among the students introduction is started with the mind mapping and thereon students find interesting to learn more about IoT. Different software and hardware components required for IoT is explained with pictures and vedios. Different sensors that can be deployed for the measurement of strain, temperature, pressure, gas, smoke are explained in detail. Different application areas like health monitoring like structures and bridges, smart car parking, smart mix design were discussed with practical examples. Further scope of Civil Engineers is narrated and explained the importance of interdisciplinary research in the future construction industry. Few demonstration vedios about health monitoring of bridges are shown which found to be very interesting to further explore to emerging concepts like IoT.

A student report on the talk stated that “Since the lecture given thrown more emphasis on interdisciplinary knowledge among Civil and Computer Engineering, scope of job opportunities for Civil Engineers can also be widen in IT domain”.



Guest Lecture on 06.2.19 on “Applications of IoT in Civil Engineering”

REPLAST EXPO 2K19

Sona College of Technology, one of the top ranking Engineering colleges in India, has achieved global identity through its involvement in research in recent technology and successful completion of projects and products, have organized an exhibition “The Replast Expo 2k19”. The Exhibition was organized by the Department of Civil Engineering, Sona College of Technology on 15th February (Friday), 2019 at 10.00 am to 6.00 pm in Dr.APJ Abdul Kalam Hall located at Sona College of Technology, Salem. It was coordinated by Asst. Prof. Ms. M. Deepika, Civil Dept, SCT along with the Students. The Programme was inaugurated by Dr. K. Parthipan, City Chief Health Officer, Salem and Er. P. Ashokan, Joint Chief Environmental Engineer, Tamilnadu Pollution Control Board, Salem in the august presence of Dr. S.R.R.Senthil Kumar, Principal and Dr. R. Malathy, HoD & Dean (R&D)/Civil, SCT.

Students displayed about 20 numbers of projects and models; The Expo was focused on giving awareness about Impact of usage of Plastics which leads to degradation of our Biodiversity and the usage of Alternatives of Plastics to rectify the current issues and threats involved in Polypropylene Plastics. The Students impart the knowledge of Eco - friendly and Sustainable material usage to avoid the usage of Petroleum based Polypropylene Plastics.



Er. P. Ashokan, Joint Chief Environmental Engineer, Tamilnadu Pollution Control Board, Salem Region distributed the prize for the winners



Dr. K. Parthipan, City Chief Health Officer, Salem, Principal Dr. S. R. R. Senthil Kumar, SCT and HoD Civil Dr. R. Malathy, SCT interacted with the students who presented their model in the Expo.



Er. P. Ashokan, Joint Chief Environmental Engineer, Tamilnadu Pollution Control Board, Salem Region interacted with the students about their Model.

GUEST LECTURE ON LATEST ADVANCEMENTS IN STRENGTH OF MATERIAL

Department of Civil Engineering has organized a guest lecture on the topic of “ Latest Advancements in Strength of Material” by Dr. K.Chinnaraju, Professor, Anna university , Chennai on 18/02/2019 (10.00 AM to 01.00 PM) for the second year students. The objective of this lecture was to enhance the student's knowledge in the field of strength of materials. During the lecture, Dr.K.Chinnaraju highlighted the basics of strength of material and its applications in the field of civil engineering. He explained about the problems and basic to be considered in the area of deflections of beams and principal stresses. Difficulties in the problems were explained and some short cut method was explained to the students making the problem interesting and easier. The overall session was useful for the students to understand the deflection problems, stresses and theories of failure.



Guest Lecture Delivered by Dr. K.Chinnaraju

CARVE- 2K19, INTER COLLEGE TECHNICAL SYMPOSIUM

CARVE- 2K19, an Inter college technical symposium, was organized by Association of Civil Engineering of Sona

Don't be afraid to give up the good to go for the great

College of Technology on 19th February, 2019 at SONA PG Auditorium in the presence of students and faculty members of civil engineering department and participants from various institutions. We invited the chief guest as Mr.Jhon Lourdes Suganth, Managing Director, Divine integrated farms India pvt ltd, Coimbatore who gave a keynote address on the topic of Introduction to VUCA in construction industry. He motivated and more interact with the participants during his speech. The welcome address by Dr.R.Malathy, HoD of civil Engineering department, SCT. The presidential address was given by Dr.S.R.R.Senthilkumar, principal, Sona College of technology. Mr.vignesh, student chairman, expose the details of carve -19 to the gatherings. The students from various institutions are participating in technical and non technical events. The cash prizes and medals were distributed to students who were won and participated in the different activities for the CARVE-19. The vote of thanks was given by Mr. S.Anand, Student secretary –ACE. The program was organized by Mr.K.Prakash, Asst Prof, and coordinator for civil engineering association.



Mr.Jhon Lourdes Suganth, Managing Director, Divine integrated farms India Pvt Ltd, Coimbatore inaugurate the function

GUEST LECTURE ON “QUALITY CONTROL AND ASSURANCE IN CONSTRUCTION

The lecture was planned for M.E Construction Engineering and Management students to focus on the topic “Quality Control and Assurance in Construction” held on 23.02.2019 in Seminar Hall, Civil Block. The lecture was handled by Er.S.Venkataramani, Director

CPMS Hosur who holds 33 years of industrial experience in project implementation and offering various consultancy services on Turnkey projects, Project management and Project quality assurance services. The session started by 9.30am with his brief lecture on Quality aspects in Construction and then followed by tea break. The lecture continued till 12.00pm and followed by Site visit to University Block, SCT.

During the site visit, Mr.Venkataramani gave various dimensions to quality stating from material stocking, labours and sequence works and various other aspects. Students enthusiastically asked their doubts and the site visit was like a brainstorming session and full of interaction. Post the site visit, the session continued with final note on quality aspects in construction. Finally the session was completed by 1.30pm revamping the concepts and a final vote of thanks.



Er.S.Venkataramani, Director CPMS Hosur discuss with students about their doubts at the site visit

ICON 2019-5TH NATIONAL CONFERENCE ON INNOVATIONS IN CONCRETE AND CONSTRUCTION

The Civil Engineering Department of Sona College of Technology has organized a two days 5th National Conference on Innovations in Concrete and Construction on 12/03/18 and 13/03/18 and the conference was inaugurated on 12th March'18. The welcome address was given by Dr.R.Malathy Prof&Head and she

mentioned about the conference and its outcomes, followed by Dr. S.R.R. Senthilkumar, Principal, SCT delivered the presidential address. Er A.Manickavel, Project Management Consultant & Trainer, Chennai gave a special keynote address, Chennai on "Productive Construction Technology" and Mr K.S. Ravichandran, Marketing Head, Teemage Precast In, Chennai delivered a special key note address on "Precast Housing for Nuclear Power Corporation of India". In addition Dr Manusanthanam, Professor, IITM, Chennai presented a lecture on "3D Printing" by Webinar. A MoU is signed with De Nova solutions, the chief guests along with office bearers inaugurated the Centre of Excellence of BIM.



Dr.R.Malathy Prof&Head, Dr.S.R..R.Senthilkumar Principal, SCT and Er A.Manickavel, Project Management Consultant & Trainer, Chennai at inauguration

The next day (13/03/18) Er.M.Vinoth, Assistant Design & Estimation Engineer, Keller Grundbah GMBH, Bahain gave keynote session on "Geo Techniques in Modern Construction" and Er G.Dinesh kumar Territory Head, Sales & Marketing, Ultratech Building Products, Chennai gave the lecture about "Smart and Green Building Products" following this Er S.Jagadeshan, Deputy Manager (Technical Service), Ramco cements, Salem delivered the Technical lecture on "Concrete Quality & Site Issues". An online demo about Drones was done by Mr Aravind Shanmugam, Dronix, Bangaluru. After the technical paper presentation a special keynote address was given by Er R.Balakrishnan, Manager, Corporate Quality, BHEL (Retd.) on "Non-Destructive Testing Methods". Students and faculties from various Engineering colleges have presented their papers and research

findings in the conference. Best paper award was given among the papers presented and certificates for presentation were given for the participants. Vote of thanks for the event was delivered by Prof. P.Priyadarshini, Assistant Prof/Civil, Sona College of Technology.

TRAILBLAZE

Technical event for second year students "Trailblaze" is organized by Department of Civil Engineering on 15.3.19 at CV Raman hall inculcating various topics like Mobile apps for Civil Engineering, IoT application in Civil Engineering and Remote sensing for Civil Engineering. Students presented various themes under these topics as teams and best team has been rewarded with prize.

The resource person for the topic Mobile app was Mr.Mani, Classic Construction and he gave various outputs to the students regarding development new apps from students to enrich their knowledge in civil domain. Students presented various apps prevail in Civil domain and shown demonstration with some case studies. For the second topic IoT in Civil Engineering, Dr.Rajeswari, ASP/CSE appointed as evaluation guest and gave more output to the students to do more projects. Students presented various topics like planning, smart city and waste management using IoT using different case studies. For the topic Remote sensing application Dr.Anbarasu, Periyar University chaired the session. He appreciated the students work in this field. He explained few case studies on the application of remote sensing. In total 140 students participated in the event, and got benefited from the event. Student reported that such type of event not only facilitate to share latest information and also to fetch job opportunities in this emerging field in future.

IGBC STUDENTS CHAPTER INAUGURATION AND WORKSHOP ON "GREEN BUILDING"

A green building is one which uses less water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building. In order to accelerate a step towards the goal of sustainability, IGBC (Indian Green Building Council) students Chapter was initiated at Department of Civil Engineering, Sona College of Technology on 29.3.19. Followed by the inauguration, workshop on Green Building was conducted wherein external participants from various colleges actively participated to explore the concept Green Building.

Er.Ashok Kumar, Core Convener, CL-IGBC, Bangalore & Er. Mr. S. ARUNACHALAM, Structural Engineer, Safe Structures were invited as chief guest for the workshop. C.Valliappa, chairman of Sona group of Institutions presided over the function. Dr.S.R.R.Senthil Kumar, Principal, Sona College of Technology felicitated the programme and urged the students to acquire more on Green building concepts. Welcome address was proposed by Dr.R.Malathy, HoD/Civil and she emphasized the urge of the concept to achieve the goal of sustainability. Student chapter was inaugurated by the student team members comprises of Chairman, Secretary, treasurer and members. Projects like low cost Construction material display Boards and chair from waste rubber tyre were displayed to emphasis the shift to eco-friendly materials interms of sustainability. Around 75 students participated in the workshop and different modules like Evaluation parameters, Green building certifications were covered along with some case studies of green building in India. Technical events were also conducted between the sessions wherein students actively participated and thus explored to Green building concepts. Prize winners in the event were awarded and motivated to continue their learning

process after the workshop. Dr.Gulshan Taj, IGBC Students Co-ordinator proposed vote of thanks and emphasized the need of the Green building concept in the context of modern construction techniques.



IGBC Students Chapter Inauguration

INTERNATIONAL SEMINAR ON "INDUSTRIAL WASTES AND BY- PRODUCTS: AN EMERGING GREEN AND SUSTAINABLE CONSTRUCTION MATERIAL"

In the era towards sustainability, huge demand has been observed to accommodate industrial by products into useful construction materials in the form of structural members and panels. In order to create awareness on effective utilization of industrial wastes an international seminar on "Industrial Wastes and By-Products: An Emerging Green and Sustainable Construction Material" is organized by the Department of Civil Engineering, Sona College of Technology on 5.4.2019 at MBA Conference Hall.

Prof. Khalifa Al-Jabri, Professor, Sultan Qaboos University, Oman was invited as the resource person for the seminar. Dr.S.R.R. Senthil Kumar, Principal, Sona College of Technology gave the welcome address and introduced the resource person. He explicated about the Hierarchy of waste management and explained the need of incorporation of industrial wastes in Oman Countries as most of the byproducts are produced from oil factories. He also discussed about the current

scenario of other waste products like copper slag, Spent Catalyst and Ferrochrome Slag from various industries and their effective utilization in construction materials. Experiments conducted on development of nano materials from wastes in Sultan Qaboos University was also discussed with brief data base. Dr.Malathy, HoD/Civil proposed vote of thanks wherein she emphasized the importance of such waste material in India in order to achieve the goal of sustainability.



Prof. Khalifa Al-Jabri, Professor, Sultan Qaboos University, Oman was honored by Dr.S.R.R. Senthil Kumar, Principal, Sona College of Technology

ALL INDIA SEMINAR ON "SUSTAINABLE APPROACH FOR UTILIZING INDUSTRIAL WASTES IN CONCRETE CONSTRUCTION"

The Institution of Engineers (India) is the largest multidisciplinary professional body that encompasses 15 engineering disciplines and gives engineers a platform to share professional interests. This year, The Institution of Engineers (India), Salem Local Center under the Aegis of "Civil Engineering Division in consortium with Department of Civil Engineering, Sona College of Technology organizes All India Seminar on "Sustainable approach for utilizing industrial wastes in concrete construction" on 26th & 27th April 2019.

The seminar commenced with an introduction by Dr R Malathy, Profesotr/HoD and gave a short introduction about the seminar and emphasized on the importance of industrial waste utilization in concrete. Er D Arulselvan, The chairman, IEI Salem Local Centre, Salem welcomed the gathering and shared the importance of becoming an IEI student member. He also added that there are options where student can avail