e-Newsletter

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS
INDIA SECTION

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Updates on ICSCI-2014

Dear Esteemed Members,

Greetings!

As you all know, India Section of ASCE is organizing an International Conference on Sustainable Civil Infrastructure (ICSCI 2014) on 17-18, October 2014. The conference has received overwhelming response from India and Abroad in terms of abstract submission. We are happy to announce that 15 experts from abroad and India are going to present on theme topics and about 300 high quality abstracts were received by the last date for submissions. Submission of accepted papers is in progress. We are committed to bring a high quality proceedings from this conference. Registration is open and interested members are requested to register early. A number of sponsorship opportunities are available for organizations and companies working in the area of sustainability to display their work and products. For details, please visit http://icsci2014.asceindia.org/.

The knowledge base that we are aiming to generate on Sustainable Infrastructure from this conference would be enormous due to the participation of experts from various sectors of Civil Engineering arena. Hope, this international conference will not only provide a member meet, but also provide a common platform for academia and practitioners to discuss issues related to the Sustainability aspects of infrastructure development in India and abroad.

We look forward to seeing you in Hyderabad.

Best regards

Prof. G L Sivakumar Babu & Dr. SireeshSaride

IN THIS ISSUE

News from Regions

Northern Region News

ASCE India Section International Student Chapter At Zhcet, AMU Aligarh, April 4th, 2014

ASCE India Section, International student chapter was launched at Department of Civil Engineering, Zakir Hussain college of Engineering & Technology, AMU Aligarh on April 4th 2014, with great enthusiasm. The program was attended by faculty members, students of civil engineering department in large number.

ASCE faculty advisor Prof Arshad Umar welcomed visiting ASCE team Mr. SK Vij, President ASCE IS NR, Mr. ArifSididqui, Secretary ASCE IS NR, Mr MN Srivastava, ASCE IS NR Technical committee and Er. Sultan Khan Rao. Chairman, Department of Civil Engineering Prof. Mohammad Arif promised full support to this new synergy between ASCE and the ZHCET, AMU Aligarh in his address to the attendees. ASCE North Region leadership and ZHECT faculty advisor Prof. Arshad Umar worked very closely towards this accomplishment.

The program was inaugurated by the, pro Vice Chancellor Brigadier (Retd) S Ahmed Ali. Brigadier Ali reiterated the need of such technical engagement for the benefit of students and the faculty. Mr. SK Vij, President ASCE North Region, thank the faculty chairman and the ASCE faculty advisor for providing ASCE an opportunity to launch the student chapter.

Mr. ArifSidiqui, Secretary ASCE IS North Region informed the students and the faculty, the ASCE process to establish the ASCE student chapter and necessitated the need for a two way working approach to benefit ASCE and student both. ASCE Technical committee conducted a student concrete quiz competition, which was taken very enthusiastically by the students. First three positions were recognized with token momentous.

From L-R Arif Siddiqui, ASCE; Prof Mohibullah Dean (Faculty of Engg), Prof (Retd)….Brigadier S A Ali PVC, AMU, Aligarh, Prof Mohammad Arif, Chairman Deptt of Civil Engg, Mr MN Srivastava,(ASCE-Technical Commitee)

Nominated ASCE faculty advisor Prof. Arshad Umar, addressing the gathering

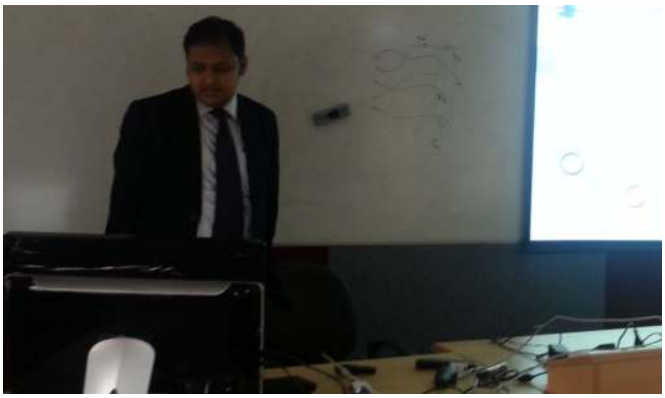
ASCE Concrete quiz prize distribution ceremony

Southern Region News

Lecture on Kolkata's sewer rehabilitation: Benchmarking sustainable urban regeneration by Dr. Ayanangshu Dey, May 6, 2014

ASCE IS, Southern Region in association with the Department of Civil Engineering,Indian Institute of Science Bangalore organized a lecture on Kolkata's sewer rehabilitation: Benchmarking sustainable urban regeneration by Dr. Ayanangshu Dey, MEng, PhD, Senior Consultant, JB Enviro Consultants Pvt Ltd, Kolkata, on Tuesday May 6, 2014, 2014 at 04:00 pm at Department of Civil Engineering Indian Institute of Science, Bangalore. The following is the abstract of the talk.

Abstract: Rehabilitation of century-old brick sewers involves important sustainability and serviceability issues. The Kolkata Municipal Corporation initiated an ambitious project in 2007 to rehabilitate, in its oldest section, major brick sewers more than 130 years old. The first phase of this project involved refurbish-



Dr. Ayanangshu Dey delivering the lecture

ment of three trunk sewers about 12 km long, forming the backbone of the core city area's ageing sanitation infrastructure. The long-term issues addressed included retention of discharge capacities of sewers, regaining their structural integrity, reduction in water logging, protection against corrosion, future cleaning and maintenance, and socio-environmental aspects. Adoption of trenchless technology helped significantly in execution of works in a heavily congested urban area. The project presented a perfect example of municipal asset management and sustainable urban renewal for a colonial city that has been in existence for over 300 years. The cost of the project was about £32 million and the refurbished sewers were re-commissioned in 2011.

The lecture was attended by ASCE members, student members and faculty of the Department of Civil Engineering, Indian Institute of Science, Bangalore as well as engineers from Atkins and other organizations.

Lecture on Impacts of Climate Change on Regional Hydrology by Prof. P P. Mujumdar, IISc, May 26th, 2014

ASCE, Southern Region Karnataka chapter in association with the Department of Civil Engineering, Indian Institute of Science Bangalore organized a lecture on Impacts of Climate Change on Regional Hydrology by Professor P P. Mujumdar, Department of Civil Engineering, Indian Institute of Science, Bangalore on Monday May 26, 2014, 2014 at 04:00 pm at Department of Civil Engineering Indian Institute of Science, Bangalore. The following is the abstract of the talk.

Abstract: Climate change results in regional hydrologic change. The three visible signals of climate change, viz., increase in global average temperatures, rise in sea levels and change in precipitation patterns convert into signals of regional hydrologic change in terms of modifications in water availability, evaporative water demand, hydrologic extremes of floods and droughts, water quality, salinity intrusion in coastal aquifers, groundwater recharge and other related phenomena. A major research focus in hydrologic sciences in recent years has been assessment of impacts of climate change at regional scales. An important research issue addressed in this context is related to the responses of water fluxes on a catchment scale to the global climatic variations. In this seminar, an overview of research carried out at IISc on assessment of impacts of climate change on regional water resources is provided. The lecture was attended by ASCE members, student members and faculty of the Department of Civil Engineering, Indian Institute of Science, Bengaluru.

Prof. P.P Mujumdar delivering the lecture

Congratulations to the Award Winners

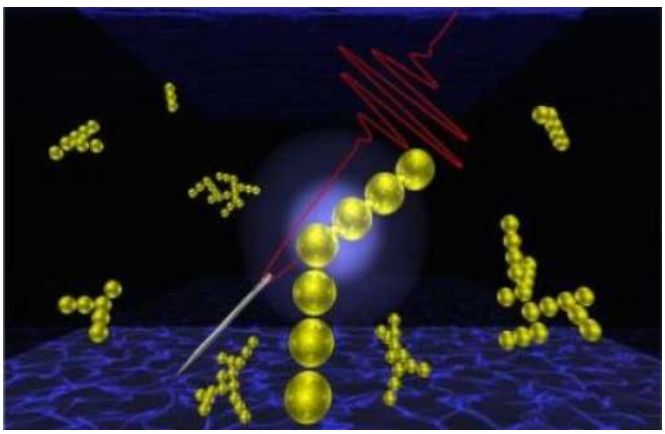
Dr. Anil K Kar

Prof. C.S.P. Ojha

- Section congratulates Dr. Anil K Kar, F.ASCE, Chairman and Managing Director, Engineering Services International Pvt. Ltd. Kolkata and Past President of India Section for being selected by the American Society of Civil Engineers to receive the 2015 Henry L. Michel Award for Industry Advancement of Research.
- Section congratulates Prof. C.S.P. Ojha and Dr. B.R. Gurjar, Department of Civil Engineering, IIT Roorkee on receiving 'ASCE State of the Art of Civil Engineering Award 2014' for the Paper titled: "Climate Change Modeling, Mitigation, and Adaptation," published by EWRI in 2013.

Tech Briefs

Building 'invisible' materials with light



A new method of building materials using light, developed by researchers at the University of Cambridge, could soon enable technologies that are often considered the realm of science fiction, such as invisibility cloaks and cloaking devices.

Although cloaked starships won't be a reality for quite some time, the technique which researchers have developed for constructing materials with building blocks a few billionths of a metre across can be used to control the way that light flies through them, and works on large chunks all at once.

The key to any sort of 'invisibility' effect lies in the way light interacts with a material. When light hits a surface, it is either absorbed or reflected, which is what enables us to see objects. However, by engineering materials at the nanoscale, it is possible to produce 'metamaterials'(materials which can control the way in which light interacts with them). Light reflected by a metamaterial is refracted in the 'wrong' way, potentially rendering objects invisible, or making them appear as something else.

Metamaterials have a wide range of potential applications, including sensing and improving military stealth technology. However, before cloaking devices can become reality on a larger scale, researchers must determine how to make the right materials at the nanoscale, and using light is now shown to be an enormous help in such nano-construction.

The technique developed by the Cambridge team involves using unfocused laser light as billions of needles, stitching gold nanoparticles together into long strings, directly in water for the first time. These strings can then be stacked into layers one on top of the other, similar to Lego bricks. The method makes it possible to produce materials in much higher quantities than can be made through current techniques. In order to make the strings, the researchers first used barrel-shaped molecules called cucurbiturils (CBs). The CB's act like miniature spacers, enabling a very high degree of control over the spacing between the nanoparticles, locking them in place.

In order to connect them electrically, the researchers needed to build a bridge between the nanoparticles. Conventional welding techniques would not be effective, as they cause the particles to melt. "It's about finding a way to control that bridge between the nanoparticles," said Dr Ventsislav Valev of the University's Cavendish Laboratory. "Joining a few nanoparticles together is fine, but scaling that up is challenging."

The key to controlling the bridges lies in the cucurbiturils: the precise spacing between the nanoparticles allows much more control over the process. When the laser is focused on the strings of particles in their CB scaffolds, it produces plasmons: ripples of electrons at the surfaces of conducting metals. These skipping electrons concentrate the light energy on atoms at the surface and join them to form bridges between the nanoparticles. Using ultrafast lasers results in billions of these bridges forming in rapid succession, threading the nanoparticles into long strings, which can be monitored in real time.

"We have controlled the dimensions in a way that hasn't been possible before," said Dr Valev, who worked with researchers from the Department of Chemistry and the Department of Materials Science & Metallurgy on the project. "This level of control opens up a wide range of potential practical applications."

Courtesy: University of Cambridge

Formula calculates thickness of bombproof concrete

An innovative type of steel-reinforced concrete protects buildings better from bomb attacks. Researchers have developed a formula to quickly calculate the concrete's required thickness. The material will be used in the One World Trade Center at Ground Zero.

Earthquakes and explosions produce tremendous forces. Pressures in the immediate vicinity of a car bomb are in the range of several thousand megapascals, and even further away from the detonation itself, pressures are still in the order of several hundred kilopascals. Pressure in a bicycle tire -- at about three bar -- corresponds to about 300 kilopascals. "So people at a good distance from the detonation point are not so much endangered by a pressure wave -- our bodies can usually cope pretty well with them -- it's flying debris that poses the real danger," explains Dr. Alexander Stolz from the Safety Technology and Protective Structures department at the Fraunhofer Institute for High Speed Dynamics, Ernst Mach-Institut, EMI in Efringen-Kirchener, a German town just north of Basel. This is exactly what happens to conventional reinforced concrete when it is hit by an explosion's pressure wave: it is so brittle that individual and often large pieces are torn off and fly through the air uncontrolled.

Dr. Stephan Hauser, Managing Director of DUCON Europe GmbH & CoKG, has developed a concrete that merely deforms when subjected to such pressures -- and doesn't break. Behind the development is a special mixture made from very hard high-performance concrete, combined with finely meshed reinforced steel. The EMI has been supporting Hauser for many years in the optimization of his patented innovation. In particular, the researchers take responsibility for dynamic qualification testing of the material under extreme loads. This also involves characterizing the material and calculating characteristic curve profiles. The researchers have developed a mathematical formula that simply and quickly computes the required thickness of the new concrete for each specific application. "Calculations used to be based on comparable and historical values," says Stolz. "Now we can use a universal algorithm."

The formula was developed during a test series with the new shock tube in Efringen-Kirchen. "We can simulate detonations of different blasting forces -- from 100 to 2,500 kilograms TNT at distances from 35 to 50 meters from buildings. And that's without even having to use explosives," says Stolz. The principle behind it is this: The shock tube consists of a (high-pressure) driver section and a (low-pressure) driven section, which are separated by a steel diaphragm. Air can be compressed in the driver section to a pressure of up to 30, bar, i.e. to approximately 30 times atmospheric pressure at sea level. The steel diaphragm is ruptured when the desired level of pressure is reached: the air is forced through the driven section as a uniform shock front that hits the concrete sample being tested, attached to the end of the shock tube. "With conventional concrete, the impact pressure ripped out parts of the sample concrete wall, which failed almost instantly, while the ductile and more flexible security version of the concrete merely deformed. There was no debris, and the material remained intact," says Stolz. Thanks to its ductile qualities, the security concrete is considerably less bulky and yet more stable than conventional steel-reinforced concrete. Thinner building components are possible. "As a rule of thumb, you get the same stability with half the thickness," says Stolz.

Formula also appropriate for earthquake and blast protection

Designing elements with the ductile concrete is easier with the new computational formula. The material's high load capacity, many years of experience in its use in a variety of applications, and ultimately its load limits under explosive charge led to it being used in the new One World Trade Center in New York. The building rests on a 20 story, bombproof foundation that reaches 60 meters underground. Overall, at points within the building where safety is especially critical, several thousand square meters of safety concrete have been used to shore up the construction. Over the past few years, the skyscraper has been growing steadily upwards on the southern tip of Manhattan, on the site of the old World Trade Center's Twin Towers. On September 11, 2001, an unprecedented act of terror resulted in the collapse of the towers, burying more than 3000 people under the debris. At 541.3 meters, the One World Trade Center is the tallest building in the USA and the third tallest in the world. "Our formula allows us to calculate the exact thickness of the concrete required to meet the safety considerations posed by such a special building," says Stolz.

Events

Managing the Design Process: Keeping on Schedule, within Budget, and Selecting the Right Resources
August 7-8, 2014, MD - Baltimore

Risk-Based Seismic Design and Evaluation
August 7-8, 2014, MO - Saint Louis

Structural-Condition Assessment of Existing Structures
August 7-8, 2014, OH - Cincinnati

Streambank Stabilization for Restoration and Flood Control Projects
August 13-15, 2014, TN - Nashville

Design of Lateral Force-Resisting Systems Using the 2012 International Building Code
August 14-15, 2014, GA - Atlanta
Design, Construction, and Renovation of

Masonry Structures - Newly Updated for 2012 IBC and 2011 MSJC
August 14-15, 2014, ME - Portland

Project Delivery Methods for Transportation Engineers and Owners - NEW
August 14-15, 2014, MN - Minneapolis

HEC-RAS Computer Workshop - Cambridge, MA
August 20-22,2014, MA - Cambridge

Seismic Loads for Buildings and Other Structures
August 20-22,2014, CO - Denver

Earthquake-Induced Ground Motions
September 4-5, 2014, FL - Lake Buena Vista

Design and Renovation of Wood Structures - Newly Updated for 2012 IBC
September 4-5, 2014, MD - Baltimore

Seismic Design of Highway Bridges
September 4-5, 2014, CA - Long Beach

Earned Value Management for Project Performance
September 8-9, 2014, TX - San Antonio

HEC-RAS Computer Workshop for Unsteady Flow Applications
September 10-12, 2014, MO - Kansas City

Design of Foundations for Dynamic Loads
September 10-12, 2014, PA - Philadelphia

Structural-Vibration Analysis: Design and Troubleshooting
September 10-12, 2014, NM - Albuquerque

Leadership Development for the Engineer
September 11-12, 2014, ME - Portland

Design of Concrete Pavements
September 11-12, 2014, CO - Greenwood Village

Earth-Retaining Structures: Selection, Design, Construction, and Inspection - Now in an LRFD Design Platform
September 11-12, 2014, IL - Oak Brook

International Conference on Sustainable Civil Infrastructure (ICSCI 2014)
October 17-18, 2014, Hyderabad, India.
organized by India section of ASCE in association with the Department of Civil Engineering, IIT Hyderabad at Katriya Hotel and Towers, Hyderabad.
http://icsci2014.asceindia.org/

DFI 39th Annual Conference on Deep Foundations
Tuesday, October 21, 2014 - Friday, October 24, 2014
Marriott Marquis 404-521-0000
265 Peachtree Center Ave NE Atlanta, Georgia, USA

International conference on 'Modeling Tools for Sustainable Water Resources Management'
28-29 December, 2014
organized by the Department of Civil Engineering, IIT Hyderabad. The conference is preceded by a 2-Day workshop that provides hands on experience on modeling tools like SWAT and MODFLOW. For details, visit:
http://civil.iith.ac.in/mtswrm/