Dr. Narayanan Neithalath obtained his PhD from Purdue University in 2004, specializing on civil engineering materials. His research emphasis is on the development and characterization of sustainable infrastructural materials, with an emphasis on “materials by design” approach. He focuses on novel tools of material characterization at different length scales using tools that are based on electron and x-ray imaging, electrical impedance, NMR, and indentation. He is also interested in combining high-fidelity experiments with numerical simulations to develop material design tools for several applications, thereby reducing the uncertainties associated with trial-and-error. He has published 100 papers in refereed international journal publications, along with several conference proceedings, and has been a keynote speaker at various national/international conferences. He is a recipient of several awards for novel material design, and is the Editor of the ASCE Journal of Materials in Civil Engineering. Currently he is serving as a Professor in the School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering, Arizona State University, Tempe AZ 85287-3005, USA.

About NITK
National Institute of Technology Karnataka (NITK) Surathkal is located in Mangalore (also called Mangaluru) City, Karnataka State, India. NITK is a centrally funded technical institute and was established in the year 1960. NITK is a premier institution engaged in imparting quality technical education and providing support to research and development activities. NITK is recognized as an institute of national importance by an act of Indian parliament. NITK has carved a niche for itself among the best technical institutions in India. NITK has been consistently ranked among the top ten technical institutions in the country. Today, the institute offers 9 B.Tech, 27 post graduate and doctoral programmes in all its 14 Departments and is making significant advances in R&D and outreach activities. NITK is probably the only institution in the country which can boast of its own beach.

About the Department
The Department of Civil Engineering is the one of the oldest departments of this institute, which established in the year 1960. The department presently offers one B.Tech, six post graduate and doctoral programmes in various disciplines. The department has well experienced faculty, skilled technical staff and well equipped laboratories. It is recognised QIP centre for training of faculty from other engineering colleges and polytechnics. The department has been always in the forefront in taking up R&D initiatives and industrial consultancy assignments.

For more information:
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Dr. Bibhuti Bhusan Das is currently serving as Assistant Professor at National Institute of Technology Karnataka, Surathkal since May 2015. Prior, he was serving as a Senior Associate Professor and Centre Head at National Institute of Construction Management and Research (NICMAR), Goa campus. He has been working as a Post-Doctoral Research Associate and Adjunct Professor in the Department of Civil Engineering at Lawrence Technological University, Southfield, Michigan, USA. His area of research includes project management, green construction management, microstructure characterization of materials, non-destructive testing of concrete structures, corrosion of reinforcement and durability studies on concrete.

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NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL, MANGALORE – 575025

A Five Day Course on
Concrete: Microstructure Characterisation
18-22 June, 2018
Call for Registration and Participation

Resource Person
Prof. Narayanan Neithalath
Professor in School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, USA.

Course coordinator
Dr. Bibhuti Bhusan Das
Organised by
Department of Civil Engineering
National Institute of Technology Karnataka, Surathkal, Mangalore-575 025 Karnataka, India
Course Overview

Concrete is a composite material, which consists of a binding medium, fine aggregates and coarse aggregates. The binding medium consists of a mixture of hydraulic cement, water and several mineral and chemical admixtures. The hydraulic cement, due to its interaction with water sets and hardens, and leads to the formation of a hard solid matrix. This process, is responsible for all the advantageous properties of concrete, and influences the microstructure of the material (which in turn determines the properties) in several ways. The mechanical properties (strength, stiffness and toughness) and durability (resistance to moisture and ionic transport, reinforcement steel corrosion) of concrete is a function of its microstructure. Therefore understanding the microstructure and being able to characterize it becomes important in developing and designing the next generation of sustainable binders (especially these containing high volumes of waste/by-product materials such as fly ash) for desirable properties. The determination of the microstructural features of concrete is a non-trivial task and necessitates the employment of very advanced and sophisticated techniques including scanning electron microscopy (SEM), mercury intrusion porosimetry (MIP), electron microprobe, nanoindentation, x-ray tomography, gas pycnometry, and spectroscopy (ion, electrical, nuclear magnetic resonance etc).

This course will focus on the theory behind these advanced characterization methods and their range of applicability in cementitious materials research and practice. The participants will be provided with the rationale for selecting different techniques for specific applications in order to obtain the needed information to make informed judgments. This is a specialized program and is aimed at faculty members with limited experience in advanced characterization, motivated undergraduate and post graduate students and research scholars in civil engineering. Practicing civil engineers and industry researchers will also find this course very helpful and refreshing, especially given the focus of the course on advanced techniques that can be used for condition assessment and forensic evaluation of concrete structures. Course participants will learn these topics through lectures, hands on tutorials and case studies.

Course Objectives

- Exposing the participants to the complex microstructure of concrete.
- Enhancing the capability of the participants to understand the microstructure and its link to the concrete material design and properties of interest, so as to be fully informed about the role processing-microstructure-property relations in heterogeneous materials.
- Building confidence and capability amongst the participants in the application of advanced characterization techniques for concrete, and its application to other similar porous materials.

Topics to be covered

Overview of concrete: Microstructure, Microstructure characterization tools and techniques – Scanning electron microscopy, Impedance spectroscopy, Mercury intrusion porosimetry, Nuclear magnetic resonance spectroscopy.

Who can participate?

Executives, engineers (government, PSU and Private) and researchers from manufacturing, service and government organizations including R&D laboratories.

Students at all levels (BTech/MSc/MTech/PhD) or Faculty from academic institutions and technical institutions.

Registration Process

Stage-1: Web Portal Registration: Visit http://www.gian.iitkgp.ac.in/GRIGN/index and create login User ID and Password. Fill up the blank registration form and do web registration by paying Rs. 500/- online through Net Banking/Debit/Credit card. This provides the user with life time registration to enrol in any number of GIAN courses offered.

Stage-2: Course Registration: Login to the GIAN portal with the user ID and Password already created in Step 1. Click on Course Registration option at the top of Registration form. Select the Course titled "Concrete: Microstructure Characterisation" from the list and click on Save option. Confirm your registration by clicking on Confirm Course.

Selection and Mode of Payment

On registration in the course, selected candidates will be intimated through e-mail. They have to remit the required course fee through DD drawn in favour of Director, NITK Surathkal, payable at Surathkal.

In addition to the above fee, one-time online fee of Rs. 500/- is to be paid for registration in the GIAN web portal. (See registration process stage 1)

Registration/Course Fee (Non-refundable)

Participants from abroad: US $ 100 (students), US $ 200 (others)

Industry/ Research Organizations: Rs. 5000/-

Academic Institutions: Rs. ₹1500 (students), Rs. ₹3000 (others)

Note: Maximum number of Participants: 50 (Participants will be selected on first-cum-first serve basis). The Registration fee includes instructional materials and tutorials.

Accommodation

Out station participants can be provided accommodation in the Institute Guest Houses (limited accommodation on first-cum-first serve basis) inside the campus on direct payment. The Registration fee does not include lodging and boarding.
National Institute of Technology Karnataka, Surathkal
MHRD Scheme on Global Initiative for Academic Networks (GIAN)
Advance Level Course
On
“Concrete: Microstructure Characterisation”
Duration: 18-06-2018 to 22-06-2018

Registration Form

1. Name of applicant: ____________________________________________________

2. Designation & Department: ____________________________________________

3. Mailing Address: _____________________________________________________
_______________________________________________________________________
_______________________________________________________________________
(Mobile): _____________________________________________________________

5. Email: ______________________________________________________________

6. Qualification: _________________________________________________________

7. Experience: Teaching: _____________________ and Industrial: _______________

8. Comment on your exposure: ____________________________________________

9. Fee Payment Details

Amount Rs: ______________________ Demand Draft No. : ______________________
Bank: ______________________________ and Date: ___________________________

10. Category of participants:

[ ] Faculty/Student/Research scholar of NITK
[ ] Faculty/Student/Research scholar of Outside NITK
[ ] Industry/Research Organizations

11. Require accommodation Facility? : Yes / No

I agree to abide by the rules and the regulations governing the GIAN–MHRD Course and I will attend
the course for entire duration.

Place: __________________________
Date: ___________________________

Signature of the applicant

Note: 1. Filled registration form with Demand Draft should be send to the course coordinator.
2. Demand draft drawn in favour of Director, NITK Surathkal, payable at Surathkal