GLOBAL INITIATIVE OF ACADEMIC NETWORKS

GIAN course on

Fundamentals and Modelling of Micro/Nano Machining Processes

June 24-29, 2019

INTERNATIONAL FACULTY:
Dr. Mustafizur Rahman, Professor, Department of Mechanical Engineering, National University of Singapore

HOST FACULTY/COURSE COORDINATOR:
Dr. Jose Mathew, Professor, Dept. of Mechanical Engg., NIT Calicut, Kerala, India

LOCAL COORDINATOR:
Dr. Ashok S., Dean Research & Consultancy, NIT Calicut, Kerala, India

OVERVIEW

Miniaturization of the products and systems is increasing in demand and has covered every area of modern world. Typical microproducts include micro reactors, MEMS devices, micro medical components, home appliances, telecommunication devices, electronic devices, automotive and aerospace components, etc. Micro-manufacturing technologies are well established in electronics manufacturing, however using them to manufacture complex 3D shapes with high accuracy in materials like non-silicon metals, polymeric devices and composites is a challenge. Introduction of advanced materials forces manufacturing engineers/researchers to develop newer, efficient, cost effective, and stable micromachining processes. This GIAN course aims to give an overview about the fundamentals of various micromachining process and explain how to model the machining processes of various ductile/brittle materials and new materials. It will provide a platform to discuss the current research activities across the globe in these areas.

OBJECTIVES

The main objectives of the course are as follows:

i) To give an overview about the various micromachining processes, with emphasis to fundamentals.
ii) To learn how to model chip formation, machining characteristics during various processes such as turning, milling, etc.
iii) To enable the participants to learn the machining of both ductile and brittle materials in micro regime.
iv) To provide practical exposure to basic micromachining processes and various measurement and characterization techniques.

COURSE OVERVIEW

- Fundamentals of micromachining
- Chip formation in micromachining
- Modelling of micromachining
- Machining of brittle and ductile materials in micro/nano regime
- Fundamentals and applications of new technologies like ELID, precision and nano finishing processes

The Course will be supported with practical sessions/ demonstrations/ hands own training.

Grade will be awarded based on the performance which will be assessed during the course.

INTERNATIONAL FACULTY

Dr. Mustafizur Rahman
Professor, Department of Mechanical Engineering
National University of Singapore
www.profmrahman.com

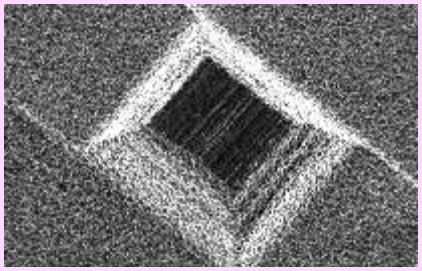
Prof. Mustafizur Rahman is a highly visible researcher in the areas of micro/nano machining covering both conventional and non-conventional processes. He is the first person in the world to develop a machine to carry out compound machining to perform multiple machining processes. This new-concept machine has made a paradigm shift in the domain of micro and machining. His group also has the credit of establishing simultaneous EDM and ECM process.

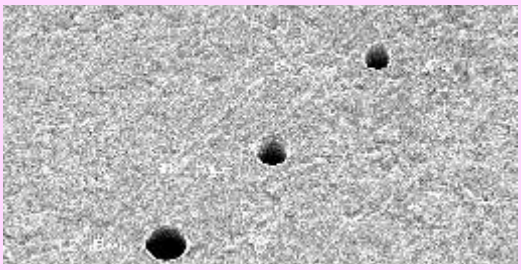
He has successfully established a new machining zone termed extrusion-like mechanism zone in addition to the usually known ploughing and shearing zones. This new concept proposed through analytical solution has been substantiated through experimental investigations. This concept clearly explains the ductile mode machining of even brittle material and enables mirror finish surfaces without the application of any further processing, like grinding and/or polishing. This mode of machining is very useful for optics industries.

His most significant contribution in the areas of micro and nano machining is reflected through the book “Advanced Machining Processes” (Volume 11 of Comprehensive Materials Processing) which has been compiled by him and published by Elsevier. It is composed of his significant breakthrough innovations in manufacturing mostly through his PhD supervision projects.

WHO CAN ATTEND?

- Students at all levels (B.Tech. / M.Tech. / PhD., in Mechanical/ Production Engineering and allied areas
- Faculty from reputed academic institutions and technical institutions with aptitude for doing continuous research in these areas
- Executives, engineers and researchers from government organizations/industries, including R&D organizations





Department of Mechanical Engineering, National Institute of Technology Calicut, Kerala, India

ABOUT GIAN COURSE

Govt. of India approved a programme titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence; http://www.gian.iitkgp.ac.in

ABOUT NIT CALICUT

National Institute of Technology Calicut (NITC) is one of the 31 institutions of national importance governed by he NIT Act 2007 and is fully funded by the Government of India. Originally established in 1961 as a Regional Engineering College (REC), it was transformed into a National Institute of Technology in the year 2002.

The institute offers bachelors, masters and doctoral degree programme in Engineering, Science, Technology and Management. With its proactive collaborations with a multitude of research organizations, academic institutions and industries, the institute has set a new style for its functioning under the NIT regime. The Institute is presently offering ten UG programme and thirty PG programme along with Ph.D programme in various fields of Engineering, Science Technology and Management; http://www.nitc.ac.in

ABOUT MED AND ADVANCED MANUFACTURING FACILITIES@ NIT CALICUT

Department of Mechanical Engineering is the largest and one of the oldest departments in the Institute. It offers two undergraduate and six postgraduate programmes apart from Ph.D. programmes in diverse specializations. It also offers a number of short term/continuing education programmes. It is a DST- FIST sponsored department and recently DST has sanctioned Rs 251 lakhs under FIST scheme to set up a Centre for Precision Measurements and Nanomechanical Testing. Advanced Manufacturing Centre in the department is one of the finest facilities available in manufacturing. The major equipments available include, 3D Optical Profilometer, Nanoindenter, 3 axis Integrated Multipurpose Micro Machining Centre, 5 axis CNC Coordinate Measuring Machine, CNC Machining Centres, CNC EDM Machines, Additive Manufacturing Machines, High Speed Camera, Thermal Imager, Six component and Mini Dynamometers, etc. A fully fledged CAD/CAM Centre with a dozen of popular industry relevant software is working round the clock. Metrology Laboratory with the state of the art facilities is also available. For more details; http://nitc.ac.in/dept/me/amc/NITC.htm

ADDRESS FOR CORRESPONDENCE

DR. JOSE MATHEW
Professor & Coordinator

GIAN Course on Fundamentals and
Modelling of Micro/Nano Machining Processes

Department of Mechanical Engineering
National Institute of Technology Calicut
NIT Campus P.O ., Kozhikode- 673601,
Kerala, India

Phone: +919447416639, +914952286405;
Email: josmat@nitc.ac.in

http://www.nitc.ac.in/index.php/?url=users/view/190/12/3

SELECTION AND MODE OF PAYMENT

Selected candidates will be intimated through email. They have to remit the necessary course fee to the bank as per the details given below (inclusive of GST).

Participants from Abroad	: 300 USD
Participants from India	
Industry/Research Organizations	: 10000 INR
Faculty from Academic Institutions	: 7000 INR
Research Scholars/Students (getting stipend)	: 3000 INR
Students (not getting stipend)	: 1500 INR
Account Name	: DIRECTOR NIT CALICUT
Account No.	: 35909407299
Bank	: State Bank of India
Branch	: CREC, Chathamangalam Kozhikode-673601
BranchCode	: 002207
IFSC	: SBIN0002207
MICRCode	: 673002012
SWIFTCode	: SBINPNBB392

For any queries, please contact the coordinator.

The above fee includes the cost of instructional materials, computer use for tutorials, use of internet facility, refreshments and working lunch.

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 the registration process outlined below). Accommodation for outstation participants will be charged separately. No TA/DA will be paid for any participant.

REGISTRATION PROCESS

Step #1: Web Portal Registration: Visit GIAN Website at the link: http://www.gian.iitkgp.ac.in/GREGN/index and create login, User ID, and Password. Fill up the GIAN registration form and do web registration by paying Rs.500/- online through Net Banking/ Debit/ Credit Card as per instructions given there in. This provides the user with life time registration to enroll in any number of GIAN courses offered (Skip this step, if already registered with GIAN portal). Step #2: Course Registration: Login to the GIAN portal again 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 "Fundamentals and Modelling of Micro/Nano Machining Processes" from the list and click on the Save option. Confirm your registration by clicking on the Confirm Course option. The participant may then proceed for the course registration with the course coordinator by filling out the registration form. Only selected candidates need to pay the course fee in the form of Draft/NEFT/RTGS.

The duly filled up registration form and the DD/ NEFT/RTGS receipt must be sent to the course coordinator. For provisional registration, scanned copies of the registration form should be sent to josmat@nitc.ac.in at the time of web portal registration. The DD/ Receipt of NEFT/RTGS and the original registration form (hard copy) must reach the coordinator on or before June 08, 2019. The maximum number of participants of the program would be limited to 50.

IMPORTANT DATES

- Last date for receiving applications : May 20, 2019
- Last date for Intimation to prticipants by email : May 24, 2019
- Course dates : June 24-29, 2019

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Department of Mechanical Engineering
National Institute of Technology Calicut, Kerala, India

Registration Form

Name: ..... M | F

Designation:.....

Highest Qualification & Specialization: ..... CGPA/% *.....
Programme and Semester: ..... CGPA/% * ..... (students)
**attach proof*

Organization.....

Address:.....

.....

.....

Mobile No: ..... Email: .....

Your current research/ ongoing project .....

.....

Details of Payment of Course Registration Fee *(payment need to be made only after intimation of selection. No return of the payment, once it is made).*

DD No.....Date .....Bank ..... Amount.....

If paid through NEFT/RTGS

Transaction Number ..... Date ..... Bank .....

Accommodation Required: Yes/ No

Date ..... Signature of the Applicant.....

Please Send to:
DR. JOSE MATHEW
Professor & Coordinator
GIAN Course on Fundamentals and Modelling of Micro/Nano Machining Processes
Department of Mechanical Engineering
National Institute of Technology Calicut
NIT Campus P.O ., Kozhikode- 673601,
Kerala, India
Phone: +919447416639, +914952286405;
Email: josmat@nitc.ac.in

APPROVAL FROM AFFILIATED INSTITUTE OF THE APPLICANT

Certified that Mr./ Ms/ Dr.....
is an employee/student of our institute. If selected, he/she will be permitted to attend the GIAN course on Fundamentals and Modelling of Micro/Nano Machining Processes conducted by NIT Calicut during June 24-29, 2019.

Date: ..... Signature .....
and Seal of Approving Authority