

Course on Laser Assisted Surface Micro- and Nano-Fabrication

Overview

Laser based surface Micro- and Nano- fabrication is considered to be a route toward next-generation mass production for various applications ranging from consumer electronics to wide variety of bio-medical devices. Conventional Lasers are well known for their extensive application in industries, to carry out marking, drilling, annealing, and surface modification etc. However owing to the demand in fabricating feature size devices down to submicron or even nanometer scale. There is a need to come up with a tailor made surface micro –fabrication technique.

Among the different micro-fabrication techniques, As a mask less and noncontact process, laser micro/ nano fabrication has its unique advantages in a flexible setup, able to be operated in air, vacuum or liquid environment, which makes it as the most attractive processing or manufacturing tool for much more extensive applications. A few novel techniques have been developed to make functional nanostructures which includes process such as Laser Induced Backside wet etching (LIBWE), Laser micro-printing, Laser Induced forward transfer(LIFT), etc. However challenges still persist in fabricating nanostructure over a large area in a short time for mass production. Thus there is a need to equip the Indian industries and the organization in this cutting technology to compete with the international community for efficient functional device development.

Modules	<ol style="list-style-type: none"> 1. Fundamentals of Laser assisted material interaction in Micro & Nano scale 2. Laser based micro and nanostructure fabrication 3. Laser based micro surface etching & patterning 4. Laser based micro-/Nano- Surface Treatment 5. Laser based micro printing of 1-D and 2-D structures <p>Dates: July 8th- July 14th 2018</p> <p>Number of participants for the course will be limited to fifty.</p>
You Should Attend If...	<ul style="list-style-type: none"> • Engineers, scientist and researchers from manufacturing, service and government organizations including R&D laboratories. • Undergraduates, M.E/ M.Tech and PhD Engineering students, with Mechanical, Manufacturing, Production and candidate with Msc in science can also attend • Faculties from academic institutions
Fees	<p>The participation fees for taking the course is as follows:</p> <p>UG, PG students & Research Scholars: INR 3000/-</p> <p>Faculty Members: INR 6000/-</p> <p>Foreigners: USD 300</p> <p>Industry and Others: INR 10000/-</p> <p>The above fees include all instructional materials, tutorials and assignments, 24 hrs free internet facility.</p>
Accommodation	<p>Paid accommodation will be provided to participants on first-come-first-serve basis.</p>

The Faculty



Dr. Daisuke Nakamura is working as Associate professor in the Department of electrical Engineering, Kyushu University, Fukuoka, Japan since 2010. He received his doctor of engineering degree in information science and electrical engineering from Kyushu University in Japan in March 2009. His research interest includes applications of

laser ablation, Laser micro and Nano fabrication, ZnO micro sphere generation, laser plasma interaction and laser spectroscopy. He has published more than 100 International Research publications and 4 patents. He is a member of SPIE, the Japanese Society of Applied Physics, and he is a steering committee member in Laser society of Japan. He has collaborative projects with Misthubishi , Kyushu electrical company, Gigaphoton Laser industry. He has received a technology development award from SPIE for His outstanding contribution in the development of ZnO nanostructures based UV laser diodes.



Dr. I. A. Palani is currently an Associate Professor in the Mechatronics and Instrumentation lab, Discipline of Mechanical Engineering, Indian Institute of Technology Indore. Before Joining IIT Indore, he was working as a Post doctoral research scientist in Graduate school of Information science and Electrical Engineering, Kyushu University, Fukuoka Japan. His area of research includes Opto-

Mechatronics system design; Laser assisted micro-manufacturing, smart materials and structures. He is into the development of Shape memory alloy for micro-device development; he has more than 100 research publications in International journal and conference. He has filed 6 patents He has also contributed,few book chapters. He is currently involved in establishing projects funded by different funding agencies including DST,SERB, DAAD, JSPS, EPSRC etc. He is closely working with industries such as WABCO, Volvo Eischer etc. Currently he is also the Head of the discipline of Metallurgy Engineering and Material science, IIT Indore, India.

For any information regarding eligibility fee payment, travel information, accommodation, etc., please contact the course coordinator via e-mail or phone.

Course Co-Coordinator

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