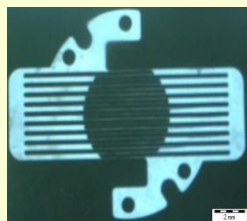
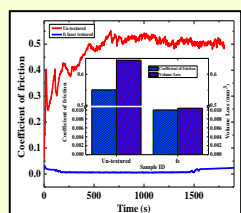


CENTRE FOR LASER PROCESSING OF MATERIALS (CLPM)

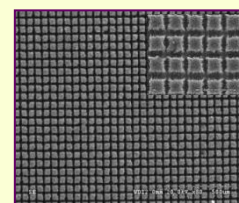
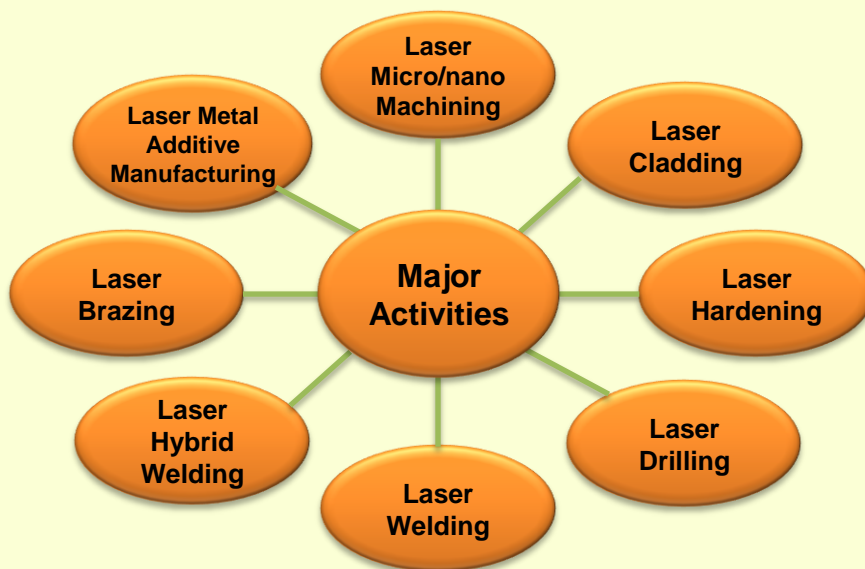
Promoting and providing laser-based materials processing solutions and technologies for industrial applications



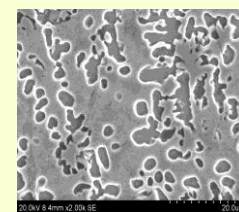
Micro-Heater



Friction behavior of laser microtextured cast iron surface



Micropatterning of CNT forest



Microstructure of laser clad Metal-Ceramic coatings

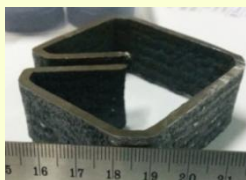
MAJOR PROCESSING FACILITIES

❖ Ultrafast Ti-Sapphire based Laser Micromachining System

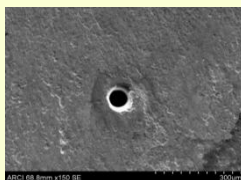
- 12W at 10kHz, 100fs-50ps and 100ns
- 5-axis CNC with nm resolutions
- Micro machining, micro texturing, micro-cutting, engraving, ablation

❖ Fiber Coupled Diode Laser

- 200 – 6000 W CW/pulsed , 900-980 nm
- 6-axis Robotic System with Turn and Tilt Table
- Hardening, Cladding, Alloying, Re-melting, Conduction Welding, Direct Metal Deposition, Plastic Welding and Brazing



Additive Manufacturing



Pin Hole for Flash X-Ray



Grid for Pulsed Electron Source



Hemming bed Hardening



Crankshaft Hardening



Hardened steam turbine blade



High Pressure Nozzle Guided Vane



Aero-engine Combustion Liner



Die tool repair

MAJOR PROCESSING FACILITIES

❖ CO₂ Slab Laser

- 100 – 3500 W (CW), 8 kW peak power (Pulsed)
- 4-axis CNC (1500 mm X 3000 mm)
- Welding, Cutting, Surface Modification and Hybrid Welding

❖ Pulsed Nd:YAG Laser

- 400 W (Average) 20 kW (Peak), 1064 nm
- 0.3 – 20 ms Pulse duration with shaping capability, Repetition rate (0.2 – 500 Hz)
- 3-axis CNC (800 mm X 800 mm.)
- Precision Drilling, Micro-Welding, Cutting, Surface Texturing



Ti-Sapphire Ultrafast Laser (50 ps-100 fs, 12 W, 10kHz)



Laser Welding of Solenoid Valves



Microwelding



Al-Steel laser brazed joint



Laser-MIG hybrid welding



CMT Welding



Diode Laser brazing system



High Power Diode Laser (6 kW, Fiber coupled)



INTERNATIONAL ADVANCED RESEARCH CENTRE FOR POWDER METALLURGY AND NEW MATERIALS (ARCI)

(An autonomous R&D Centre of Department of Science and Technology, Govt. of India)

CENTRE FOR CERAMIC PROCESSING (CCP)

