

## Encl.1

SENSE – Centre for Sensors, Instrumentation and Cyber-Physical System Engineering  
(former IDDC – Instrumentation Design & Development Center)

We are looking for candidates with a strong academic background, excellent teaching ability, capable of conducting and leading independent world class research, with a **proven/ demonstrated history of hands-on product and prototype development at the individual and team level and of building world-class research facilities**, in the following areas:

**Optical Engineering and Optical fabrication:** *with a PhD in EE/CS/CSE/IT/Mech/ or a related discipline/interdisciplinary area with a background in photonics engineering, optical design, optical systems, optical remote sensing, imaging.*

Advanced optical fabrication technologies, optical design, precision optical metrology, optical system engineering, micro and diffractive optics, wavefront sensing, adaptive optics, Nano-optics and nanophotonics, optical remote sensing, Holography and interferometric imaging, Digital Holography, Non destructive testing, spectroscopic instrumentation

**Optical Engineering and optical instrumentation systems:** Optical 3-D imaging with emphasis on biomedical application, optical metrology, design and development of opto-electronic/electro-optic sensors, NDT technology.

**Laser Systems and Applications / Biomedical & optical Instrumentation:** bio-photonic sensing devices, opto-mechanical micro- and nano-fabrication of device using direct laser writing and UV-lithography, laser/LED based visible light communication (VLC) and LiFi based systems. VLC applications for underwater and free space communications, smart photonics based point of care devices for healthcare, imaging, spectroscopy, diagnostic devices for diseases, fiber optic and integrated photonic sensors for healthcare, pollution monitoring and explosives detection, smart lighting and energy saving devices, sunlight harvesting, NIR and IR imaging for biomedical application, wearable sensors for health monitoring, design of point of care diagnostic devices.

**Precision mechanics:** Precision optical and mechanical fabrication, Mechatronics, Microfluidics, Composite and nano-materials.

### **Electronic systems & Instrumentation:**

**Mixed signal ICs and circuits** - electronic circuit design (analog and digital), microprocessor / microcontroller based product design and testing, small signal conditioning, knowledge of EMI/EMC and signal interfacing, applied signal processing for instrumentation, CAD and simulation / HIL;

**Sensors and Smart Systems,** sensor networking and interfacing, mixed signal processing including DSP, Embedded systems including Application Specific Design, Design of electronic systems, Industrial quality control, signal and image processing, non-destructive testing, Instrumentation and Control.

**Cyber-physical systems:** *The preferred background is a PhD in EE/ECE/CSE/CS and allied areas / inter-disciplinary areas relevant to cyber-physical systems with a strong background in systems development, including algorithmic aspects.*

Smart user- and environment-aware infrastructure, Monitoring techniques and novel sensing technologies for modeling; Big data, data reliability and trust with emphasis on their application; Smart manufacturing (optimised production systems through enhanced sensorisation, networking machines, products, vehicles and people); Machine Learning and Artificial Intelligence applied to health applications/public health, genetics and biological networks, energy autonomous IoTs, resilient IoT and security of the Internet of Things, e.g., in the context of vehicular networks, the energy grid, the smart home, and other similar smart connected systems.

**MOEMS/Sensors :** *Preferred background is a PhD in EE/Physics/allied areas. Currently, we are looking for interests in system level aspects of sensors and their integration. Candidates with an interest in fabrication / packaging / material aspects of sensor devices and microelectronics are advised to seek a primary appointment with Units of IIT Delhi which have fabrication facilities such as Nano-Research Facility, EE, CARE , Dept of Materials Science and a joint appointment with SENSE.*

**MEMS/MOEMS based devices and their integration** with circuitry for sensing, microsensors for medical, defense and space applications, design of microelectronic devices, integration and multi-sensor fusion to measure various physical quantities.