Congratulations to New ICFO PhD Graduate

Dr. Gaurav Kumar graduated with a thesis entitled ?Colloidal Quantum Dots Based Bolometer'

March 11, 2024

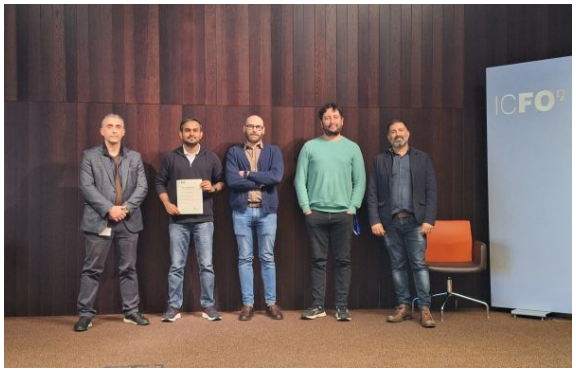
We congratulate Dr. Gaurav Kumar who defended his thesis today in ICFO's Auditorium.
Dr. Gaurav Kumar obtained his MSc in Electronics at University of Delhi in India. He joined the Functional Optoelectronic Nanomaterials research group at ICFO led by ICREA Prof. Dr. Gerasimos Konstantatos as a PhD student.
Dr Kumar's thesis entitled ?Colloidal Quantum Dots Based Bolometer' was supervised by ICREA Prof. Dr. Gerasimos Konstantatos

ABSTRACT:

Bolometer technology, crucial for uncooled thermal detection in thermography, industrial inspection, monitoring, surveillance application, relies on materials requiring sophisticated instrumentation for their growth and fabrication. The events of COVID-19 and the recent

Nobel Prize in chemistry have underscored the need of low cost and easy to handle thermal imaging technology, as well as the potential of Colloidal Quantum Dots (CQDs) for high performance optoelectronic devices, respectively.
This thesis, explores a new material platform based on CQDs, and studies the suitability of CQDs for the Infrared (IR) bolometer technology. Various components of a bolometer device such as a thermistor and a metamaterial absorber have been demonstrated with the use of CQDs, and a complete bolometer device fabrication have been achieved. The work presented in this thesis lays the groundwork and is anticipated to contribute to the continuous advancement and improvement of uncooled IR sensing devices, paving the way for low-cost development and wider dissemination of IR bolometer technology.

Thesis Committee:
Dr. Agustin Mihi, Institute of Materials Science of Barcelona (ICMAB - CSIC)
Prof. Dr. Pelayo Garcia, ICFO
Dr. Francesco Di Stasio, Instituto Italiano di Tecnologia



Thesis Committee