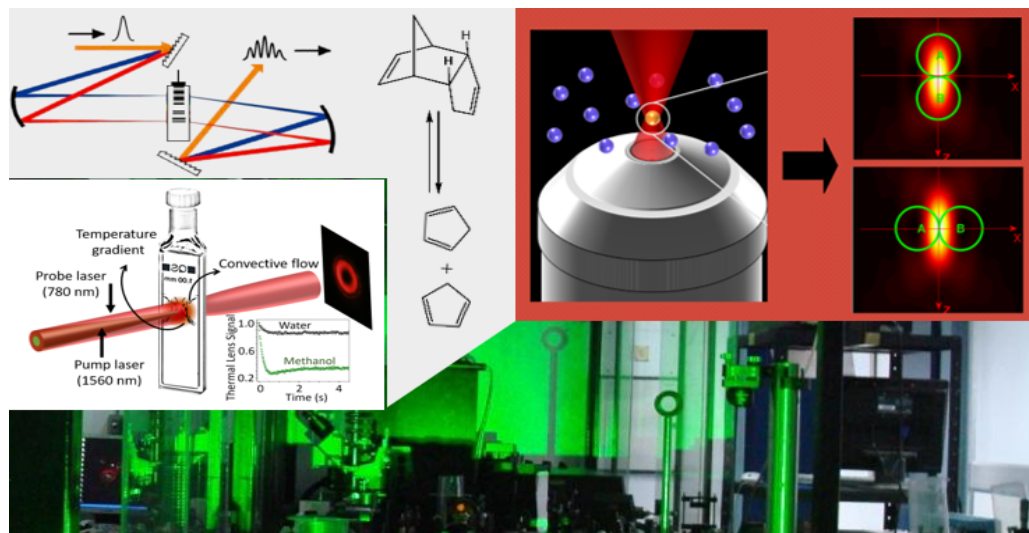


# D. Goswami receives the ICO Galileo Galilei Medal

Prof. Debabrata Goswami of the Indian Institute of Technology Kanpur has been awarded the 2018 ICO Galileo Galilei Medal



Prof. Goswami holds the Prof. S. Sampath Chair Professor of Chemistry of the Indian Institute of Technology, Kanpur (IITK). He is also Adjunct Professor at the Center for Lasers and Photonics, the Design Program and the Center for Cognitive Science.



Sketch of optical systems developed at Goswami's lab: pulse shaping, thermal lens and optical tweezers

**Prof. Goswami** is an ultrafast laser spectroscopist who has pioneered the use of coherent control with femtosecond pulse shaping for spatiotemporal control, quantum computing, microscopy, etc. His research work includes the construction of several tunable and programmable femtosecond pulse shapers to deal with measurement uncertainty. His methods to circumvent the intricacies of ultrashort time scales involve utilizing Fourier optics and interferometers.

He has been the first to propose that the dissipation dynamics of thermal lens introduced by high repetition rate femtosecond lasers include convective processes. His work is rooted in insightful experiments and has shown the thermal lens dissipation results in molecular structure distinction. He has developed self-calibrated femtosecond optical tweezers (SCFOT) that can directly probe colloidal assembly, their structure, and orientation.

He used this novel method of SCFOT to directly measure and control 'in situ' temperature and viscosity at microscale volumes. Visualizing the hitherto unseen being a common thread of his research efforts, he pioneered a method to distinguish between overlapping fluorophores in multi-photon imaging microscopy by exploiting repeated excitation and de-excitation processes with high repetitive rate femtosecond lasers.

Some of the academic and research accolades of Dr. Goswami are the Hoechst Advanced Technology Division Industrial Affiliates Fellowship for outstanding academic record at Princeton, the International Senior Research

Fellowship award of the Wellcome Trust (UK), the Swarnajayanti Fellowship of the Department of Science and Technology (Govt. of India), Thathachary Science Award (India).

Prof. Goswami is notable also for his passion for pedagogy and is a passionate and engaging teacher, who is also a favorite K12 teacher on Indian Television. His courses in IITK are always in high demand amongst undergraduates, and he volunteered a 12-week graduate level course on Quantum Computing for the National Portal for Technology Education and Learning. His passion for research is not localized to himself, however, as he has guided fifteen Ph.D. scholars, sixty-four Masters Students, and countless undergraduate students. Many of his students are now formidable researchers in their own right. He is known for maintaining a balance between being a driven supervisor and a caring guardian. His unwavering dedication to the pursuit of excellence in research, regarding the ethics and the expansion of human knowledge, has inspired and equipped his students to develop their ideas and to explore new directions. Prof. Goswami has maintained and built several of his femtosecond lasers himself, in times of erratic financial funding. He continues to work on the intricacies of measurement, light-matter interactions, and practical applications of theoretical knowledge, ever ready to guide students or learn side by side with them.

**Prof. Nataliya Kundikova**  
Chaired the committee for the  
ICO Galileo Galilei Medal 2018