NLS-29

29th DAE - BRNS NATIONAL LASER SYMPOSIUM

February 12 - 15, 2021

In Collaboration with

Indian Laser Association

Scientific Program

Day 1: Friday, 12th February 2021

Time	Topic	
10:30-12:15	**Session 1** (All times are Indian Standard Time) **Inaugural Session** (Online joining after 10:00)	
10:30-11:10	Inaugural function and addresses by dignitaries	
11:10-11:30	Address by Chief Guest: **Dr. G. Satheesh Reddy,** Chairman DRDO	
11:35-12:15	Keynote Address: **Prof. Raman Kashyap,** Montreal, Canada Photonics Gone Rogue	
12:15-13:00	**Lunch Break**	
	Session 2 Advanced Laser Technologies & Applications Session Coordinator: **Dr B N Upadhyaya** Session Chair: **Dr. Alok Ray**	
13:00-13:30	**Prof. Philippe Grelu,** Uni. Bourgogne, France Pulses and patterns in ultrafast fiber lasers: The dissipative soliton approach	IT-01
13:30-14:00	**Dr. Shaju K. Albert**, IGCAR, India Laser Welding in Fabrication of FBR fuel pins: Metallurgical Considerations	IT-02
14:00-14:30	**Prof. Michalis N. Zervas,** Uni. Southampton, UK Power Scaling Limits in High Power Fibre Lasers	IT-03
	Session 3 Oral Presentation of Paper (3 min + 2 min)	
14:30-16:45	**OPP-1A (24 nos.)** **Category 1:Physics & Technology of Lasers** Refer Annexure OPP-1A	
16:45-17:00	**Break**	
	Session 4 Lasers in Fiber based Instrumentation Session Coordinator: **Dr. Om Prakash** Session Chair: **Shri Viraj P. Bhanage**	
17:00-17:30	**Dr. Umesh Tiwari,** CSIO, Chandigarh Optical Fiber Biosensors: Principles and Applications	IT-04
17:30-18:00	**Prof. Sanjeev Raghuvanshi,** IIT, ISM (Dhanbad) Advancement of Speciality Fibre Optic sensors for In Situ monitoring	IT-05
18:00-18:30	**Dr. Aseem Singh Rawat,** BARC, Mumbai Laser based measurements and perimeter intrusion detection	IT-06
18:30-19:00	**Break** (End of the day)	

Day 1: Friday, 12th February 2021
Parallel Session

	Session 3 Oral Presentation of Paper (3 min + 2 min)
14:30-16:45	**OPP-1B (25 nos.)** **Category 9: Laser Spectroscopy & Application** Refer Annexure OPP-1B

Day 2: Saturday, 13th February 2021
Auditorium

Time	Topic	
	Session 5A Ultra Short, Ultra Intense Laser Plasma Interaction Session Coordinator: **Dr. A. Moorti** Session Chair: **Prof. R P Sharma**	
10:00-10:30	**Prof. Donald Umstadter,** University of Nebraska, Lincoln, USA Physics and Applications of Scattering with Extreme Light	IT-07
10:30-11:00	**Prof. Chan Joshi,** UCLA, USA Plasma Acceleration- What were we thinking in those early days and where are we headed?	IT-09
11:00-11:30	**Prof. G. Ravindra Kumar,** TIFR, India Spatiotemporal Dynamics of Relativistically Hot Plasmas	IT-11
11:30-11:45	**Break**	
	Session 6A Non-linear Optics **Session Coordinator: Dr. J. Jayabalan** **Session Chair: Prof. D. N. Rao**	
11:45-12:15	**Dr. Sai Santosh Kumar Raavi,** IIT Hyderabad Novel multifunctional organic chromophores for non-linear optical applications	IT-13
12:15-12:45	**Prof. K. V. Adarsh,** IISER, Bhopal Flatland Nonlinear Optics	IT-15
12:45-13:45	**Lunch Break**	
	Session 7 Oral Presentation of Paper (3 min + 2 min)	
13:45-16:15	**OPP-2A (29 nos.)** **Category 3: Laser Materials, Devices and Components (14 nos.)** **Category 6: Lasers in Material Science (15 nos.)** Refer Annexure OPP-2A	
16:15-16:45	**Tea Break**	
16:45-18:00	**Break**	
	Session 8 Ultrafast Lasers Session Coordinator: **Dr. P. K. Mukhopadhyay** Session Chair: **Dr. K. S.Bindra**	
18:00-18:30	**Prof. F. Ömerlday,** Uni. Bilkent, Ankara, Turkey Multi-GHz Burst-Mode Fiber Lasers	IT-17
18:30-19:00	**Prof. Ruediger Paschotta,** RP Photonics, Germany Solid-state Lasers for Ultrashort Pulse Generation	IT-18
19:00-19:30	**Prof. Frank W. Wise,** Cornell University, Ithaca, NY, USA Spatiotemporal Mode-Locking in Fiber Lasers	IT-19

Day 2: Saturday, 13th February 2021
Parallel Session

Time	Topic	
	Session 5B Applications of laser in Chemistry, Biology and Materials Coordinator: **Dr. J Jayabalan** Session Chair: **Dr. Anindya Datta**	
10:00-10:30	**Dr. Mohammed Ahmed,** RIKEN, Japan Probing Ultrafast Dynamics of Water at Aqueous Interfaces with Femtosecond Two-Dimensional Heterodyne-Detected VSFG Spectroscopy	IT-08
10:30-11:00	**Prof. Sachin Dev Verma,** IISER, Bhopal Visualization of charge separation at the in-plane organic heterojunctions using pump-probe microscopy	IT-10
11:00-11:30	**Prof. S. K. Sarkar,** BARC & SP Pune Univesity Making the Stories Come True: Molecular Laser Isotope Separation to Coherent Control	IT-12
11:30-11:45	**Break**	
	Session 6B Atom Optics **Session Coordinator: Dr. Sunil Verma** **Session Chair: Prof. K. C. Rustagi**	
11:45-12:15	**Dr. Harshawardhan Wanare,** IIT Kanpur, Kanpur, India Quantum Interference based approach to Nonlinear Optics	IT-14
12:15-12:45	**Dr. Y. B. Kale,** Bermingham Institute, UK “A quantum of science’ for the future technologies”	IT-16
12:45-13:45	**Lunch Break**	
	Session 7 Oral Presentation of Paper (3 min + 2 min)	
13:45-16:15	**OPP-2B (28 nos.)** **Category 2: Lasers in Nuclear Science & Technology (4 nos.)** **Category 7: Lasers Plasma Interaction (10 nos.)** **Category 8: Lasers in Industry and Defence (2 nos.)** **Category 10: Lasers in Chemistry, Biology & Medicine Fiber based (12 nos.)** Refer Annexure OPP-2B	
	Session 9 Lasers Additive Manufacturing Session Coordinator: **Dr C. P Paul** Session Chair: **Dr. U. Chandra Sekar**	
19:30-20:00	**Prof. Ehsan Toyserkani,** University of Waterloo, Canada Advancement in Monitoring and Quality Assurance Paradigms for Laser Powder-Bed Fusion	IT-20
20:00-20:30	**Prof. Andrew Pinkerton,** Uni. Lancaster, UK Towards a Predictive Model of Direct Metal Deposition	IT-21
21:00-21:30	**Prof. J. Ram Kumar,** IIT Kanpur, Kanpur Post processing of LAM components	IT-22
	Break (End of the day)	

Day 3 : Sunday, 14th February 2021

Time	Topic	
	Session 10 Ph. D. Thesis Presentations (Parallel Session, 15 minutes each)	
10:00-11:30	**ThP - A (6 nos.)** Session Coordinator: **S. G. Nakhate** **Refer Annexure ThP-A**	
11:30-11:45	**Thesis presentation (2 nos.)** (3 min + 2 min) **Refer Annexure ThP-C**	
11:45-12:00	**Break**	
	Session 11 Presentations from Industries Coordinators: **Shri P. Saxena & Dr. C. P. Paul**	
12:00-13:00	1. Presentation of Incubation Centre, RRCAT (10 min.) 2. Presentations of M/S ATOS Instruments, Banglore (15 min) 3. Presentations of M/S PG Tech Pvt Ltd., Indore (15 min) 4. Presentations of M/S Research India, Bhopal (10 min) 5. Presentations of M/S New Age Instruments, Gurugram (10 min)	
13:00-14:00	**Lunch**	
	Session 12 Oral Presentation of Paper (3 min + 2 min)	
14:00-16:15	**OPP-3A (27 nos.)** **Category 11: Lasers & Fiber based Instrumentation (12 nos.)** **Category 12: Electronics and Instrumentation for Lasers(15 nos.)** Refer Annexure OPP-3A	
16:15-16:30	**Break**	
	Session 13 Laser applications in Chemistry, Biology and Medicine Session Coordinator: **Dr S. K. Majumder** Session Chair: **Prof. N. Ghosh**	
16:30-17:00	**Prof. Igor Meglinski,** Aston Uni. UK Functional brain diagnosis with dynamic light scattering imaging approach at broken ergodicity conditions	IT-23
17:00-17:30	**Prof. Martin Leahy,** National Uni. of Ireland Lasers and Nanotechnology in Regenerative Medicine	IT-24
17:30-18:00	**Prof. Alex Vitkin,** Uni. Toronto Shedding light on radiotherapy: functional optical coherence tomography for radiobiological micro vascular imaging	IT-25
18:00-18:15	**Break**	

Day 3 : Sunday, 14th February 2021

Time	Topic	
	Session 14 Special Evening Talk	
18:15-19:15	**Prof. Martin Olivier,** Swiss Federal Institute of Technology Lausanne (EPFL) Plasmonic technologies for alloyed and hybrid metasurfaces Coordinator: **Dr. S K Majumdar** Introducer: **Prof. N. Ghosh**	ST-01
19:15-20:00	**Break**	
20:00-21:00	**Prof. Rainer Weiss,** MIT, USA (Physics Nobel Laureate 2017) The beginnings of gravitational wave astronomy: current state and future Coordinator: **Dr. Sendhil Raja** Introducer: **Prof. Somak Raychaudhary,** Director, IUCAA	ST-02
	Break (End of the day)	

Day 3 : Sunday, 14th February 2021
Parallel Session

	Session 10 Ph. D. Thesis Presentations (Parallel Session, 15 minutes each)	
10:00-11:30	**ThP – B (6 nos.)** Session Coordinator **Dr S. K. Majumder** **Refer Annexure ThP-B**	
11:30-11:45	**Thesis presentation (3 nos.)** (3 min + 2 min) **Refer Annexure ThP-D**	
11:45-12:00	**Break**	
	Session 12 Oral Presentation of Paper (3 min + 2 min)	
14:00-16:15	**OPP-3B (28 nos.)** **Category 4: Non linear, Quantum and Atom Optics (19 nos.)** **Category 5: Ultrafast lasers & Applications (9 nos.)** Refer Annexure OPP-3B	
16:15-16:30	**Break**	

Day 4: Monday, 15th February 2021
Auditorium

Time	Topic	
	15A Laser materials and devices Session Coordinator: **Dr Sunil Verma** Session Chair: **Dr D K Aswal**	
10:00-10:30	**Prof. Binay Kumar,** Univ. of Delhi, Delhi Growth of Single Crystals by Various Techniques for Optical, Piezoelectric and Communication Applications	IT-26
10:30-11:00	**Dr. Muthu Senthil Pandian,** SSN Institution, Chennai Development of High Quality Nonlinear Optical (NLO) Single Crystals for Second Harmonic Generation (SHG) Applications	IT-28
11:00-11:30	**Dr. N. Vijayan,** NPL, New Delhi Growth of Potential Nonlinear Optical Single Crystals by Melt and Solution Growth Techniques	IT-30
11:30-11:45	**Break**	
	Session 16 Laser Spectroscopy & Applications Session Coordinator: **Dr V B Tiwari,** Session Chair: **Dr S G Nakhate**	
11:45-12:15	**Dr. B. K. Sahoo,** PRL, Ahmedabad Atomic probe of nuclear properties	IT-32
12:15-12:45	**Prof. Ashok Mohapatra**, NISER, Bhuvaneshwar Dynamical phase transition in mirrorless optical parametric oscillator	IT-33
12:45-13:15	**Prof. Alika Khare,** IIT Guwahati Some of the Applications of Laser Induced Breakdown	IT-34
13:15-14:15	**Lunch**	
	Session 17 LIGO Science and Technologies Session Coordinator: **Dr Sendhil Raja** Session Chair: **Dr Sashank Chaturvedi,** Director, IPR	
14:15-14:45	**Dr. David H. Reitze,** Caltech, USA The Advanced LIGO Gravitational-wave Detector: A Discovery Machine	IT-35
14:45-15:15	**Prof. Rana Adhikari,** Caltech, USA Future of Gravitational Wave Detection Technology	IT-36
15:15-15:30	**Break**	
15:30-16:30	**Session 18 Award Presentation and Closing Ceremony**	
16:30-17:00	(Closure of NLS-29)	
17:00-18:00	**ILA General Body Meeting**	

Day 4: Monday, 15th February 2021
Parallel Hall

Time	Topic	
	15 B Laser applications in Chemistry, Biology and Medicine Session Coordinator: **Dr S. K. Majumder** Session Chair: **Prof. Renu John**	
10:00-10:30	**Prof. Jessica Ramella,** Florida International University , USA Design of wearable devices for underserved populations	IT-27
10:30-11:00	**Prof. Dalip Singh Mehta,** Indian Institute of Technology Delhi, New Delhi Quantitative phase microscopy and nanoscopy using partially spatially coherent laser light: Improvement on image sharpness, phase noise, resolution and speckle free imaging	IT-29
11:00-11:30	**Dr. Kamal Kant Sharma,** NUS, Singapore Investigation of Dengue infectivity and dynamics using Förster Resonance Energy Transfer (FRET)	IT-31
11:30-11:45	**Break**	

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