BRICS WORKSHOP ON BIOPHOTONICS - 2024

October 03 - 05, 2024

Organized by

Department of Atomic and Molecular Physics, MAHE, Manipal

Venue: Sliver Jubilee Hall, Manipal School of Life Sciences (MSLS) Annex,

Silver Jubilee Block, MAHE, Manipal – 576 104

PROGRAMME SCHEDULE

Day 1: 3rd October, 2024 (Thursday)		
08.00 AM - 08.45 AM	Registration	
08.45 AM - 09.25 AM	Breakfast	
09.30 AM- 09.35 AM	Welcome Address by **Dr. Santhosh Chidangil** Convener, BRICS workshop on Biophotonics - 2024	
09.35 AM- 09.40 AM	Overview of the BRICS Conference by **Dr. Heidi Abrahamse** South Africa Chair	
09.40 AM – 09.50 AM	Inauguration and Inaugural Address by **Lt. Gen. (Dr.) M. D. Venkatesh** Vice Chancellor, MAHE, Manipal	
09.50 AM 09.55AM	Messages from BRICS Chairs **Prof. Valery V. Tuchin (Russia)** **Prof. Qingming Luo (China)** **Prof. Vanderlei Salvador Bagnato (Brazil)** **Biophotonics Pioneers from India**	
09.55 AM – 10.00 AM	Vote of Thanks by **Dr. Sajan D. George** Convener, BRICS workshop on Biophotonics - 2024	

10.00 AM – 10.40 AM	Keynote Address by **Dr. Heidi Abrahamse** University of Johannesburg, South Africa Chair: **Prof. Murukeshan Vadakke** Matham, NTU Singapore	Phthalocyanine-Based Probes for Alleviating or Evading Tumour-Hypoxia for Enhanced Photo- and Sono-Mediated Therapy
10.40AM-11.00AM	Tea break	
Session 1		
Session Chair: Dr. Satish Rao		
11.00 AM – 11.40 AM	Invited Lecture by **Dr. Samir Kumar Pal** S N Bose National Centre for Basic Sciences Kolkata	**"**Probing" Spectroscopic Probes for Non-invasive Simultaneous Disease Diagnosis
11.40 AM – 12.20 PM	Invited Lecture by **Dr. Sangeeta Kale** Defence Institute of Advanced Technology, Pune, India	Non-Invasive Optical Sensor Setup for Health Monitoring: A Device Perspective
12.20 PM – 01.00 PM	Invited Lecture by **Dr. Dalip-Singh Meta,** IIT Delhi, India	Optical Biopsy Assisted with AI/ML: Multimodal and Multispectral Optical Techniques for Real-time Screening
01.00 PM - 01.30 PM	Invited Lecture by **Mr Brendon Roets** University of Johannesburg, South Africa	Progressing Stem Cell Regenerative Therapy via Photobiomodulation to Facilitate Tenocyte Differentiation.

01.30 PM – 02.30 PM	Lunch Break	
Session 2		
Session Chair: Dr. Samir Kumar Pal		
02.30 PM – 03.10 PM	Invited Lecture by **Dr. Chandrabhas Narayana** Rajiv Gandhi Centre for Biotechnology Thiruvananthapuram, India	Protein structure-function, drug discovery and diagnostics with Raman spectroscopy
03.10 PM – 03.50 PM	Invited Lecture by **Dr. Blassan George** University of Johannesburg, South Africa	Pheophorbide-a Mediated Photodynamic Therapy in breast and lung cancer cells in vitro

03.50 PM – 04.20 PM	Invited Lecture **by Dr. Anine Crous** University of Johannesburg, South Africa	Photobiomodulation for Enhanced Differentiation of Adipose-Derived Stem Cells into Brain Organoids and Osseous Tissue
04.20 PM – 04.35 PM	Tea Break	
04.35 PM –05.15PM	Invited Lecture by **Dr. Sajan George** Vellore Institute of Technology India	Generation of Functional Neurons by Photobiomodulation

Program of the 3rd BRICS Workshop on Biophotonics October 03 –05, 2023,Manipal, INDIA

Online session (Saratov time (UTC+4)/Brazil time/India time/RSA time/China time

Chairs:

Valery V.Tuchin, Saratov State University, Russia

Qingming Luo, Hainan University, China

Vanderlei Salvador Bagnato, University of São Paulo, Brazil

Santhosh Chidangil, Manipal Academy of Higher Education, India

Heidi Abrahamse, University of Johannesburg, RSA

Secretaries:

Polina A. Dyachenko, Optics and Biophotonics Department, Saratov State University, Saratov, Russia

Dongyu Li, HUST, China

Natalia M. Inada, University of São Paulo, Brazil

Jijo Lukose, Manipal Academy of Higher Education, India

Sathish Kumar, University of Johannesburg, RSA

Session Chair: Dr. Qingming LUO, Hainan University, China

Dr. Santhosh Chidangil, Manipal Academy of Higher Education, India

16.15-16.25/9.15-9.25 /17.45-17.55 16.15-16.25/20.15-20.25	Welcome words from **Prof. Valery V.Tuchin,** Institute of Physics and Science Medical Center, Saratov State University and **Dr. Qingming LUO,** Hainan University, China.	

16.25-16.45/9.25-9.45 /17.55-18.15 15.25-15.45/20.25-20.45	Invited Lecture **Dr. Dan Zhu**, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science, China	Tissue optical clearing imaging: from in vitro to in vivo
16.45-17.05/9.45-10.05 /18.15-18.35 14.45-15.05/20.45-21.05	Invited Lecture **Dr. Yao He,** Key Laboratory of Optic-Electric Sensing and Analytical Chemistry for Life Science, MOE, Soochow University, China	Fluorescence imaging for precision diagnosis and treatment of diseases
17.05-17.25/10.05-10.25 /18.35-18.55 15.05-15.25/21.05-21.25	Invited Lecture **Dr. Valery V. Tuchin**, Institute of Physics and Science Medical Center, Saratov State University, Institute of Precision Mechanics and Control, FRS "Saratov Scientific Centre of the RAS", Saratov, Russia; Laboratory of Laser Molecular Imaging and Machine Learning, Tomsk State University, Tomsk, Russia	Biophotonics has acquired windows of transparency of biological tissues from UV to THz waves
Day 2: 4th October, 2024 (Friday)		
8.30 AM-9.00 AM	Breakfast	
Session 1		
Session Chair: Dr. Chandrabhas Narayana		
09.00 AM – 09.40 AM	Invited lecture by **Dr. Gautham K Samanta,** Photonic Sciences Laboratory Physical Research Laboratory (PRL), Ahmedabad-380009, India	Quantum imaging of biological sample using Hong-Ou-Mandel interferometry
09.40 AM – 10.20 AM	Invited Lecture by **Dr. Vincent Mathew,** Central University Kerala, India	Topological Photonics: Concepts and Applications
10.20 AM – 11.00 AM	Invited Lecture by **Dr. Hari M Varma** Indian Institute of Technology Bombay India	A novel approach based on stochastic calculus for laser speckle imaging

11.00 AM - 11.15 AM	Tea Break

Session 2		
Session Chair: Dr. Krishna K Mahato		
11.15 AM – 11.55 PM	Invited Lecture by **Dr. C. Murali Krishna** ACTREC, Mumbai, India	Serum Raman Theranostics: Perspectives and Outlook
11.55 AM – 12.35PM	Invited Lecture by **Dr. Santhosh Chidangil** Manipal Academy of Higher Education Manipal, India	Probing of Platelet Activation dynamics using micro-Raman spectroscopy combined with Optical Tweezers technique.
12.35 AM – 1.15 PM	Invited Lecture by **Dr. AVR Murthy** Defence Institute of Advanced Technology (DIAT), Pune, India	Construction of light sheet fluorescence microscope(LSFM) for biophotonic imaging applications
1.15 PM – 02.15 PM	Lunch Break	
Poster session		
Poster session Chair: Dr. M.K. Satheesh Kumar		
02.15 PM – 04.00 PM	Poster session	
04.00 pm- 04.15pm	Tea break	
Online session day-2		
Session Chair: Valery V. Tuchin, Saratov State University, Russia **Santhosh Chidangil,** Manipal Academy of Higher Education, India		
14.45-15.05/7.45-8.05 /16.15-16.35 12.45-13.05/18.45-19.05	Invited Lecture **Dr. Hui Ma,**Shenzhen International Graduate School, Tsinghua University, China	Mueller matrix microscopy for digital pathology
15.05-15.25/8.05-8.25 /16.35-16.55 13.05-13.25/19.05-19.25	Invited Lecture **Dr. Xuantao Su,** School of Control Science and Engineering, Shandong University, China	Intelligent imaging flow cytometry for label-free analysis of single cells and exosomes
15.25-15.45/8.25-8.45 /16.55-17.15 13.25-13.45/19.25-19.45	Invited Lecture **Dr. Ping Xue,** Department of Physics,Tsinghua University, China	Multifunctional OCT for intraoperative tumor diagnosis and rapid pathology

15.45-16.05/8.45-9.05 /17.15-17.35 13.45-14.05/19.45-20.05	Invited Lecture **Dr. Xiangwei Zhao,** School of Biological Science & Medical Engineering, Southeast University, China	Plasmonic materials based biomedical applications
16.05-16.25/9.05-9.25 /17.35-17.55 14.05-14.25/20.05-20.25	Invited Lecture **Dr. Siwen Li ,** State Key Laboratory of Natural Medicines, China Pharmaceutical University, China Invited Lecture	Multimodal collaborative tumor precision therapy based on phototherapy
16.25-16.45/9.25-9.45 /17.55-18.15 14.25-14.45/20.25-20.45	Invited Lecture **Dr. Wei Chen,** School of Mechanical Science and Engineering, Huazhong University of Science and Technology	High spatiotemporal resolution multiphoton microscopy for brain imaging
16.45-17.05/9.45-10.05 /18.15-18.35 14.45-15.05/20.45-21.05	**Dr. Andrei E. Lugovtsov**, **L**aboratory of Biomedical Photonics, Faculty of Physics, Lomonosov Moscow State University,Moscow, Russia	Interaction of erythrocytes with endothelium in microfluidic channels studied by optical techniques
17.05-17.25/10.05-10-25/18.35-18.55 15.05-15.25/21.05-21.25	Invited Lecture **Dr. Victoria V. Zherdeva**, Bach Institute of Biochemistry, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russian Federation	Combining MRI and fluorescence imaging for monitoring polyester copolymers' degradation in vivo

Online session day-3 (05-10-2024)		
Session Chair: **Dr. Vanderlei Salvador Bagnato,** University of São Paulo, Brazil **Dr. Santhosh Chidangil,** Manipal Academy of Higher Education, India		
7.00-7-20/00.00-00.20 (05.10.24)/8.30-8.50 5.00-5.20/11.00-	Invited Lecture **P.Biji**, Nanosensors and Clean Energy Laboratory, PSG Institute of Advanced	Non-invasive, Label-Free SERS Salivary Biosensor Platforms based on Carbon Nanofibres for Pre-Diagnosis of Lung Cancer

11.20	Studies, Coimbatore, India	
7.20-7.40/00.20-00.40 (05.10.24)/8.50-9.10 5.20-5.40/11.20-11.40	Invited Lecture **Dr. Basudev Roy,** Department of Physics, Indian Institute of Technology Madras,Chennai, India	Study of out of plane rotations in optical tweezers and subsequent applications in soft and biological matter systems
7.40-8.00/00.40-1.00 /9.10-9.30 5.40-6.00/11.40-12.00	Invited Lecture **Prof Mike Hamblin** Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa.	New Applications of Transcranial Photobiomodulation
8.00-8.20/1.00-1.20 /9.30-9.50 6.00-6.20/12.00-12.20	Invited Lecture **Dr. Alexander V. Priezzhev** Laboratory of Biomedical Photonics, Faculty of Physics, Lomonosov Moscow State University,Moscow, Russia	Application of laser-optical methods for studying microcirculation and microrheology of blood in vivo and in vitro
8.20-8.40/1.20-1.40 /9.50-10.10 6.20-6.40/12.20-12.40	Invited Lecture **Mr. Vladislav Ermolaev** Institute of Laser Technologies, ITMO University, Russia	Investigation of laser hair colouring
8.40-9.00/1.40-02.00 /10.10-10.30 6.40-7.00/12.40-13.00	Invited Lecture **Ms. Iuzhakova V. Diana** Research Institute of Experimental Oncology and biomedical technologies, Privolzhsky Research medical University, Nizhny Novgorod, Russia	Optical bioimaging in personalization of cancer treatment
9.00-9.20/2.00-2.20 /10.30-10.50 7.00-7.20/13.00-13.20	Invited Lecture **Ms. Yulia Svenskaya** Science Medical Center, Saratov State University, Russia	Biodegradable vaterite carriers for the delivery of glucocorticoids into hair follicles
9.20-9.40/2.20-2.40 /10.50-11.10 7.20-7.40/13.20-13.40	Invited Lecture **Dr.Alexander P. Savitsky** A.N. Bach Institute of Biochemistry, Federal Research Centre 'Fundamentals of Biotechnology' of the Rus-sian Academy of Sciences, Moscow, Russia	The role of the trehalose transporter in the photoinactivation of Mycobacterium tuberculosis by near-infrared dye conjugated with trehalose

9.40-10.00/2.40-3.00 /11.10-11.30 7.40-8.00/13.40-14.00	Invited Lecture **Mr. Evgeny Shirshin,** Lomonosov Moscow State University, Moscow, Russia	Optical spectroscopy in surgery guidance from laboratory to the clinics
10.00-10.20/3.00-3.20 /11.30-11.50 8.000-8.20/14.00-14.20	Invited Lecture **Mr.Boris Yakimov,**Sechenov University, Moscow, Russia	Blood plasma spectroscopy for biomedical diagnostics: recent advances
10.20-10.40/3.20-3.40 /11.50-12.10 8.20-8.40/14.20-14.40	Invited Lecture **Mr. Denis Davydov** Lomonosov Moscow State University, Moscow, Russia.	Body composition analysis with a portable NIR device: hydration, fat and muscles
10.40-11.00/3.40-4.00 /12.10-12.30 8.40-9.00/14.40-15.00	Invited Lecture **Dr Sathish Sundar Dhilip Kumar** Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa	The Synergistic Impact of Aloin-Infused Biologically Active Film and Photobiomodulation for Wound Healing
11.00-11.20/4.00-04.20 /12.30-12.50 9.00-9.20/15.00-15.20	Invited Lecture **Dr Rahul Chandran** Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa	Hypocrellin: A natural photosensitizer in the Photodynamic therapy of Breast and Skin cancer'
11.20-11.40/4.20-4.40 /12.50-13.10 9.20-9.40/15.20-15.40	Invited Lecture **Dr Lelo Simelane** Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa	Targeted photodynamic therapy treatment on colorectal tumour spheroids
11.40-12.00/4.40-5.00 /13.10-13.30 9.40-10.00/15.40-16.00	Invited Lecture **Dr Nkune Nkune** Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa	Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa
12.00-12.20/5.00-5.20/13.30-13.50	BREAK	

10.00-10.20/16.00-16.20		
Session chair	**Dr. Heidi Abrahamse,** University of Johannesburg, RSA **Dr. Santhosh Chidangil,** Manipal Academy of Higher Education, India	
12.20-12.40/5.20-5.40/13.50-14.10 10.20-10.40/16.20-16.40	Invited Lecture **Mr. Alex Chota** Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa	Nanoparticles Loaded With Photosensitiser for Enhanced PDT Effects In Breast Cancer Cells
12.40-13.00/5.40-6.00 /14.10-14.30 10.40-11.00/16.40-17.00	Invited Lecture **Mr. Victor Chuchin** Institute of laser technologies, ITMO University, Russia	Investigation of the dynamics of the skin reflection spectrum as a result of its heating by visible or infrared laser radiation
13.00-13.20/6.00-6.20/14.30-14.50 11.00-11.20/17.00-17.20	Invited Lecture **Dr. Vanderlei Salvador Bagnato** São Carlos Institute of Physics, University of São Paulo, Brazil	Photodynamic Therapy in Brazil: From cancer to microbiological control
13.20-13.40/6.20-6.40/14.50-15.10 11.20-11.40/17.20-17.40	Invited Lecture **Dr. Natalia Mayumi Matheus Kurachi** São Carlos Institute of Physics, University of São Paulo, Brazil.	Antimicrobial photodynamic therapy – challenges and strategies for achieving inactivation in biofilms and infected tissues
13.40-14.00/6.40-7.00 /15.10-15.30 11.40-12.00/17.40-18.00	Invited Lecture **Dr. Kate Blanco** São Carlos Institute of Physics, University of São Paulo, Brazil.	Antimicrobial Resistance: Exploring Photodynamic Therapy as a Solution
14.00-14.20/7.00-7.20/15.30-15.50 12.00-12.20/18.00-18.20	Invited Lecture **Dr. Natalia Mayumi Inada** São Carlos Institute of Physics, University of São Paulo, Brazil.	High-grade squamous intraepithelial lesion (hsil) treatment with photodynamic therapy
14.20-14.40/7.20-7.40/15.50-16.10 12.20-12.40/18.20-	Invited Lecture	Murine melanoma treatment effects using photodynamic therapy and radiotherapy combination

18.40	**Dr. Mirian Denise Stringasci** São Carlos Institute of Physics, University of São Paulo, Brazil.	
14.40-15.00/7.40-8.00/16.10-16.30 12.40-13.00/18.40-19.00	Invited Lecture **Dr. Alessandra Ramos Lima** Environmental Biophotonics Laboratory, São Carlos Institute of Physics, University of São Paulo, Brazil.	Advances in photonic supplementation in plant cultivation: perspectives and challenges in agriculture
15.00-15.20/8.00-8.20/16.30-16.50 13.00-13.20/19.00-19.20	Invited Lecture **Dr. Denise Maria Zezel** Laboratory of Biophotonics, Center for Lasers and Applications – Nuclear and Energy Research Institute, IPEN/CNEN-SP, São Paulo- Brazil.	Hyperspectral imaging pathology shining light on diseases
15.20-15.40/8.20-8.40/16.50-17.10 13.20-13.40/19.20-19.40	Invited Lecture **Dr. Anderson Rodrigues Lima Caires** Optics and Photonics Group, Institute of Physics, Federal University of Mato Grosso do Sul (UFMS), Campo Grande, MS, Brazil.	Chlorophyll fluorescence spectroscopy: basics and applications
15.40-16.00/8.40-9.00 /17.10-17.30 13.40-14.00/19.40-20.00	Invited Lecture **Dr. Cicero Cena** Optics and Photonics Group, Institute of Physics, Federal University of Mato Grosso do Sul (UFMS), Campo Grande, MS, Brazil	Photodiagnosis in Latin America: Some solutions based on Optical Spectroscopy and Machine Learning
16.00-16.20/9.00-9.20/17.30-17.50 14.00-14.20/20.00-20.20	Invited Lecture **Dr. Michelle Barreto Requena** São Carlos Institute of Physics, University of São Paulo, Brazil	Optimizing photodynamic therapy for skin cancer using microneedles: a step closer to clinical trials
16.20-16.40/9.20-9.40/17.50-18.10 14.20-14.40/20.20-20.40	Invited Lecture **Dr. Lucas Danilo Dias** Universidade Evangélica de Goiás (Brazil)	Development and Application of Photoantimicrobial Films: Potential Use in Packaging and Coating for Medical Devices
16.40-17.00/9.40-10.00 /18.10-18.30 14.40-15.00/20.40-21.00	Invited Lecture **Mr. M.Sc. Matheus Garbuio** Environmental Biophotonics Laboratory, São Carlos Institute of	Photodynamic inactivation against Aedes aegypti larvae.

	Physics, University of São Paulo, Brazil	
17.00-17.20/10.00-10.20 (05.10.24)/18.30-18.50 15.00-15.20/21.00-21.20	**Valedictory function**	