

Pradipta Mukherjee, Ph.D.

Curriculum Vitae

BASIC INFORMATION

Assistant Professor
Centre for Biomedical Engineering
Indian Institute of Technology Delhi
Office: Block IV, Room 4B-7
Hauz Khas, New Delhi - 110016, India

Website: [BioPhotonica Lab](#)
E-mail: pmukherjee@cbme.iitd.ac.in
ORCID id: [0000-0002-5752-9963](#)
Publication metric: [Google Scholar](#)
Phone: +91-11-2659-1333 (Office)

RESEARCH INTERESTS

Biomedical Optics, Optical Coherence Tomography, Microscopy, Polarization Engineering, Computational Imaging.

WORK EXPERIENCE

Indian Institute of Technology Delhi, India February 2024 – Present
Assistant Professor
Centre for Biomedical Engineering (CBME)

University of Tsukuba, Tsukuba, Ibaraki, Japan July 2019 – January 2024
Postdoctoral Researcher
– Research Theme: “*Label-free functional activity and structural imaging in animal models using optical coherence microscopy*”.
– Advisor: Prof. Yoshiaki Yasuno, Computational Optics Group (COG).

Council of Scientific Industrial Research - Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh, India. September 2013 – July 2014
Senior Project Fellow (SPF)
– Project: “*Opto- Mechatronics technologies for next-generation sensors and applications*”
– Optical system design of Head-Up Display (HUD) and Head-Mounted Display (HMD).

EDUCATION

Ph.D. in Optical Engineering 2015 – 2019
Center for Optical Research and Education (CORE), Utsunomiya University, Japan
– Thesis Title: “*Measuring chemical and mechanical properties of biological tissues with Mueller matrix polarimetry*”.

M.Tech in Optics and Optoelectronics 2013
Department of Applied Optics and Photonics, University of Calcutta, India

Post B.Sc-B.Tech in Optics and Optoelectronics 2011
Department of Applied Optics and Photonics, University of Calcutta, India

B.Sc in Physics (Hons) 2008
Vidyasagar College, University of Calcutta, India

JOURNAL PUBLICATIONS

Complete list of publications can be found in [Google Scholar](#).

1. Thitiya Seesan, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Yiheng Lim, Lida Zhu, Shuichi Makita, and Yoshiaki Yasuno, “Optical-coherence-tomography-based deep-learning scatterer-density estimator using physically accurate noise model,” *Biomedical Optics Express*, 15, 2832–2848 (2024).
2. Ibrahim Abd El-Sadek, Rion Morishita, Tomoko Mori, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno, “Label-free visualization and quantification of

the drug-type-dependent response of tumor spheroids by dynamic optical coherence tomography,” *Scientific Reports* 14, 3366 (2024).

3. Lida Zhu, Shuichi Makita, Junya Tamaoki, Yiqiang Zhu, **Pradipta Mukherjee**, Yiheng Lim, Makoto Kobayashi, and Yoshiaki Yasuno, “Polarization-artifact reduction and accuracy improvement of Jones-matrix polarization-sensitive optical coherence tomography by multi-focus-averaging based multiple scattering reduction,” *Biomedical Optics Express*, 15, 256–276 (2024).
4. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Thi Hang Tran, Shuichi Makita, Ibrahim Abd El-Sadek, Yiheng Lim, and Yoshiaki Yasuno, “Renal tubular function and morphology revealed in kidney without labeling by three-dimensional dynamic optical coherence tomography ” *Scientific Reports* 13, 15324 (2023).
5. Ibrahim Abd El-Sadek, Larina Tzu-Wei Shen, Tomoko Mori, Shuichi Makita, **Pradipta Mukherjee**, Antonia Lichtenegger, Satoshi Matsusaka, and Yoshiaki Yasuno, “Label-free drug response evaluation of human derived tumor spheroids using three-dimensional dynamic optical coherence tomography,” *Scientific Reports* 13, 15377 (2023).
6. Kiriko Tomita, Shuichi Makita, Naoki Fukutake, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Antonia Lichtenegger, Junya Tamaoki, Lixuan Bian, Makoto Kobayashi, Tomoko Mori, Satoshi Matsusaka and Yoshiaki Yasuno, “Theoretical model for *en face* optical coherence tomography imaging and its application to volumetric differential contrast imaging,” *Biomedical Optics Express*, 14, 3100–3124 (2023).
7. Rion Morishita, Toshio Suzuki, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Yiheng Lim, Antonia Lichtenegger, Shuichi Makita, Kiriko Tomita, Yuki Yamamoto, Tetsuharu Nagamoto, and Yoshiaki Yasuno, “Label-free intratissue activity imaging of alveolar organoids with dynamic optical coherence tomography, ” *Biomedical Optics Express*, 14, 2333-2351 (2023).
8. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Shuichi Makita, Ibrahim Abd El-Sadek, Arata Miyazawa, Lida Zhu, Antonia Lichtenegger, Tetsuro Oshika, and Yoshiaki Yasuno, “Label-free metabolic imaging of non-alcoholic-fatty-liver-disease (NAFLD) liver by volumetric dynamic optical coherence tomography” *Biomedical Optics Express*, **13**, 4071–4086 (2022).
9. Antonia Lichtenegger, Junya Tamaoki, Roxane Licandro, Tomoko Mori, **Pradipta Mukherjee**, Lixuan Bian, Shuichi Makita, Satoshi Matsusaka, Makoto Kobayashi, Bernhard Baumann, and Yoshiaki Yasuno, “Longitudinal investigation of a xenograft tumor zebrafish model using polarization-sensitive optical coherence tomography,” *Scientific Reports* **12**, 15381 (2022).
10. Lida Zhu, Shuichi Makita, Daisuke Oida, Arata Miyazawa, Kensuke Oikawa, **Pradipta Mukherjee**, Antonia Lichtenegger, Martin Distel, and Yoshiaki Yasuno, “Computational refocusing of Jones matrix polarization-sensitive optical coherence tomography and investigation of defocus-induced polarization artifacts” *Biomedical Optics Express*, **13**, 2975–2994 (2022).
11. Antonia Lichtenegger, **Pradipta Mukherjee**, Lida Zhu, Rion Morishita, Kiriko Tomita, Daisuke Oida, Konrad Leskovar, Ibrahim Abd El-Sadek, Shuichi Makita, S. Kirchberger, Martin Distel, Bernhard Baumann, and Yoshiaki Yasuno, “Non-destructive characterization of adult zebrafish models using Jones matrix optical coherence tomography” *Biomedical Optics*

Express, **13**, 2202–2223 (2022).

12. Antonia Lichtenegger, **Pradipta Mukherjee**, Junya Tamaoki, Lixuan Bian, Lida Zhu, Ibrahim Abd El-Sadek, Shuichi Makita, Konrad Leskovar, Makoto Kobayashi, Bernhard Baumann, Yoshiaki Yasuno, “Multicontrast investigation of in vivo wildtype zebrafish in three development stages using polarization-sensitive optical coherence tomography,” *Journal of Biomedical Optics* **27**, 016001 (2022).
13. Thitiya Seesan, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Lida Zhu, Kensuke Oikawa, Arata Miyazawa, Larina Tzu-Wei Shen, Satoshi Matsusaka, Prathan Buranasiri, Shuichi Makita, and Yoshiaki Yasuno, “Deep convolutional neural network-based scatterer density and resolution estimators in optical coherence tomography,” *Biomedical Optics Express*, **13**, 168–183 (2022).
14. Ibrahim Abd El-Sadek, Arata Miyazawa, Larina Tzu-Wei Shen, Shuichi Makita, **Pradipta Mukherjee**, Antonia Lichtenegger, Satoshi Matsusaka, and Yoshiaki Yasuno, “Three-dimensional dynamics optical coherence tomography for tumor spheroid evaluation,” *Biomedical Optics Express*, **12**, 6844–6863 (2021).
15. **Pradipta Mukherjee**, Arata Miyazawa, Shinichi Fukuda, Toshiharu Yamashita, Donny Lukmanto, Kosuke Okada, Ibrahim Abd El-Sadek, Lida Zhu, Shuichi Makita, Tetsuro Oshika, and Yoshiaki Yasuno, “Label-free functional and structural imaging of liver microvascular complex in mice by Jones matrix optical coherence tomography,” *Scientific Reports* **11**, 20054 (2021).
16. Ibrahim Abd El-Sadek, Arata Miyazawa, Larina Tzu-Wei Shen, Shuichi Makita, Shinichi Fukuda, Toshiharu Yamashita, Yuki Oka, **Pradipta Mukherjee**, Satoshi Matsusaka, Tetsuro Oshika, Hideki Kano, and Yoshiaki Yasuno, “Optical coherence tomography-based tissue dynamics imaging for longitudinal and drug response evaluation of tumor spheroids,” *Biomedical Optics Express*, **11**, 6231–6248 (2020).
17. **Pradipta Mukherjee**, Tomohisa Horiguchi, Shuhei Shibata, Nathan Hagen, and Yukitoshi Otani, “Quantitative discrimination of biological tissues by micro-elastographic measurement using an epi-illumination Mueller matrix microscope,” *Biomedical Optics Express*, **10**(8), 3847–3859 (2019).
18. **Pradipta Mukherjee**, Nathan Hagen, and Yukitoshi Otani, “Glucose sensing in the presence of scattering by analyzing a partial Mueller matrix,” *Optik*, **180**, 775–781 (2019).
19. **Pradipta Mukherjee**, Shogo Ishida, Nathan Hagen, and Yukitoshi Otani, “Implementation of a complete Mueller matrix polarimeter using dual photoelastic modulators and rotating wave plates,” *Optical Review*, **26**, 23–32 (2019).

PATENTS

1. Yoshiaki Yasuno, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, and Arata Miyazawa, “Evaluation Device, Evaluation Method, and Program,” U.S. patent 20220390357 (December 8, 2022).

CONFERENCE PROCEEDINGS AND PRESENTATIONS

1. Shumpei Fujimura, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Yiheng Lim, Lida Zhu, Rion Morishita, Yuanke Feng, and Yoshiaki Yasuno “Investigating the dependency of dynamic optical coherence tomography signals on resolution and wavelength by experimental and simulation approaches,” *Proc. SPIE PC12830, Optical Coherence Tomography and Coherence*

Domain Optical Methods in Biomedicine XXVIII, PC128301E (13 March 2024).

2. Yiheng Lim, **Pradipta Mukherjee**, Shuichi Makita, and Yoshiaki Yasuno “Stokes analysis of optic axis orientation in single-mode fiber polarization-sensitive optical coherence tomography,” Proc. SPIE PC12830, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVIII, PC128300V (13 March 2024).
3. Yu Guo, Rion Morishita, Ibrahim G. Abd El-Sadek, **Pradipta Mukherjee**, Yiqiang Zhu, and Yoshiaki Yasuno “In-vivo dynamic and multi-contrast imaging of human skin by motion-suppressed dynamic optical coherence tomography,” Proc. SPIE 12816, Photonics in Dermatology and Plastic Surgery 2024, 1281602 (13 March 2024).
4. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Kosuke Okada, Thi Hang Tran, Ibrahim Abd El-Sadek, Shuichi Makita, and Yoshiaki Yasuno “Studying the effect of gluconeogenesis inhibitor drug on liver functionality using dynamic optical coherence tomography,” Proc. SPIE PC12841, Dynamics and Fluctuations in Biomedical Photonics XXI, PC1284104 (13 March 2024).
5. Ibrahim G. Abd El-Sadek, Rion Morishita, Masato Iwatsuki, Atsuko Furukawa, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno “Longitudinal drug response imaging of tumor spheroids using dynamic optical coherence tomography in conjunction with cell cultivation,” Proc. SPIE PC12841, Dynamics and Fluctuations in Biomedical Photonics XXI, PC1284103 (13 March 2024).
6. Yuanke Feng, Shumpei Fujimura, Yiheng Lim, Thitiya Seesan, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, and Yoshiaki Yasuno “Characterizing intracellular activities of dynamic optical coherence tomography: a mathematical modeling approach,” Proc. SPIE PC12854, Label-free Biomedical Imaging and Sensing (LBIS) 2024, PC128540C (13 March 2024).
7. Shumpei Fujimura, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Yiheng Lim, Lida Zhu, Rion Morishita, Yuanke Feng, and Yoshiaki Yasuno “Wavelength and resolution dependency of dynamic optical coherence tomography,” Proc. SPIE PC12854, Label-free Biomedical Imaging and Sensing (LBIS) 2024, PC128540D (13 March 2024).
8. Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Tanatchaya Seesan, Yiheng Lim, Tomoko Mori, Atsuko Furukawa, Satoshi Matsusaka, Shuichi Makita, and Yoshiaki Yasuno “Quantitative dynamic optical coherence tomography by multi-time-window signal intensity variance,” Proc. SPIE 12830, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVIII, 128300R (12 March 2024).
9. Yiheng Lim, **Pradipta Mukherjee**, Shuichi Makita, and Yoshiaki Yasuno “Optic axis imaging of biological samples by Jones matrix optical coherence tomography,” Proc. SPIE 12845, Polarized Light and Optical Angular Momentum for Biomedical Diagnostics 2024, 128450A (12 March 2024).
10. Yu Guo, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Yiqiang Zhu, and Yoshiaki Yasuno “In vivo dynamic optical coherence tomography with hardware- and software-based motion correction,” Proc. SPIE 12830, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVIII, 128300Y (12 March 2024).

11. Yuanke Feng, Shumpei Fujimura, Yiheng Lim, Thitiya Seesan, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, and Yoshiaki Yasuno “Mathematical modeling of intracellular and intratissue activities for understanding dynamic optical coherence tomography signals,” Proc. SPIE 12830, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVIII, 128300H (12 March 2024).
12. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Ibrahim Abd El-Sadek, Shuichi Makita, and Yoshiaki Yasuno, “Label-free volumetric tissue function assessment by dynamic optical coherence microscopy,” CLEO (Applications & Technology), San Jose, USA (2023) (Invited).
13. Rion Morishita, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Toshio Suzuki, Antonia Lichtenegger, YiHeng Lim, Yiqiang Zhu, Shuichi Makita, Yuki Yamamoto, Tetsuharu Nagamoto, and Yoshiaki Yasuno “Label-free intra-tissue activity imaging of alveolar organoid with three-dimensional dynamic optical coherence tomography,” Proc. SPIE 12632, Optical Coherence Imaging Techniques and Imaging in Scattering Media V, 126321C (11 August 2023).
14. Kiriko Tomita, Shuichi Makita, Naoki Fukutake, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Antonia Lichtenegger, and Yoshiaki Yasuno “New formulation of OCT for analytical signal-to-speckle separation and volumetric differential contrast imaging,” Proc. SPIE 12632, Optical Coherence Imaging Techniques and Imaging in Scattering Media V, 126320V (14 August 2023).
15. Kiriko Tomita, Shuichi Makita, Naoki Fukutake, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Antonia Lichtenegger, Junya Tamaoki, Lixuan Bian, Makoto Kobayashi, Tomoko Mori, Satoshi Matsusaka, and Yoshiaki Yasuno “Volumetric differential contrast imaging by computationally augmented optical coherence tomography microscopy,” Proc. SPIE PC12391, Label-free Biomedical Imaging and Sensing (LBIS) 2023, PC1239111 (16 March 2023).
16. Antonia Lichtenegger, Junya Tamaoki, **Pradipta Mukherjee**, Roxane Licandro, Lida Zhu, Tomoko Mori, Rion Morishita, Lixuan Bian, Ibrahim Abd El-Sadek, Shuichi Makita, Konrad Leskovar, Satoshi Matsusaka, Martin Distel, Makoto Kobayashi, Bernhard Baumann, and Yoshiaki Yasuno “Non-invasive and label-free zebrafish investigations using polarization-sensitive optical coherence tomography,” Proc. SPIE PC12391, Label-free Biomedical Imaging and Sensing (LBIS) 2023, PC123910Z (16 March 2023).
17. Thitiya Seesan, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Yiheng Lim, Shuichi Makita, Prathan Buranasiri, and Yoshiaki Yasuno “Improving the estimation accuracy of the scatterer density estimation by accounting for the spatial property of the noise in optical coherence tomography,” Proc. SPIE PC12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, PC123670Z (9 March 2023).
18. Kiriko Tomita, Shuichi Makita, Naoki Fukutake, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Antonia Lichtenegger, Junya Tamaoki, Lixuan Bian, Makoto Kobayashi, Tmoko Mori, Satoshi Matsusaka, and Yoshiaki Yasuno “Disperse scatterer model of OCT and its application to design volumetric differential contrast imaging,” Proc. SPIE PC12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, PC123671Q (27 March 2023).

19. Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Tomoko Mori, Suzuki Toshio, Antonia Lichtengger, Lim Yi Heng, Zhu Yiqiang, Shuichi Makita, Yuki Yamamoto, Tetsuharu Nagamoto, Satoshi Matsusaka, and Yoshiaki Yasuno “Low- and high-resolution volumetric dynamic optical coherence tomography of in vitro cell cultures,” Proc. SPIE PC12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, PC123671D (9 March 2023).
20. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Shuichi Makita, Ibrahim Abd El-Sadek, Arata Miyazawa, and Yoshiaki Yasuno “Label-free ex-vivo animal tissue metabolism investigation using dynamic optical coherence tomography,” Proc. SPIE PC12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, PC123671J (27 March 2023).
21. Ibrahim G. Abd El-Sadek, Rion Morishita, Tomoko Mori, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno “Label-free dynamic OCT (D-OCT) based evaluation of tumor spheroids,” Proc. SPIE PC12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, PC123671O (27 March 2023).
22. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Shuichi Makita, Ibrahim G. Abd El-Sadek, Yiheng Lim, and Yoshiaki Yasuno “Renal tubular structure and metabolism revealed by dynamic optical coherence tomography and OCT angiography,” Proc. SPIE PC12378, Dynamics and Fluctuations in Biomedical Photonics XX, PC123780B (7 March 2023).
23. Shuichi Makita, Lida Zhu, **Pradipta Mukherjee**, Yiheng Lim, Rion Morishita, Ibrahim Abd El-Sadek, and Yoshiaki Yasuno “Motion-immune digital refocusing of point-scanning optical coherence tomography using Lissajous scan for in vivo imaging,” Proc. SPIE PC12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, PC123670M (9 March 2023).
24. Ibrahim G. Abd El-Sadek, Rion Morishita, Tomoko Mori, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno “Dynamic optical coherence tomography for tumor-spheroid-based anti-cancer-drug testing,” Proc. SPIE PC12378, Dynamics and Fluctuations in Biomedical Photonics XX, PC1237804 (7 March 2023).
25. Yiheng Lim, Shumpei Kojima, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Shuichi Makita, and Yoshiaki Yasuno, “Dynamic OCT to visualize development of cotyledon vessels in sprouts,” Proc. SPIE 12391, Label-free Biomedical Imaging and Sensing (LBIS) 2023, 123910O (16 March 2023).
26. Ibrahim Abd El-Sadek, Rion Morishita, Tomoko Mori, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno “Human-derived tumor-spheroid-based anti-cancer drugs testing using dynamic optical coherence tomography,” Proc. SPIE 12632, Optical Coherence Imaging Techniques and Imaging in Scattering Media V, 126321A (11 August 2023).
27. Antonia Lichtenegger, **Pradipta Mukherjee**, Lida Zhu, Shuichi Makita, Konrad Leskovar, Martin Distel, Yoshiaki Yasuno, and Bernhard Baumann “Rapid, non-destructive, and volumetric characterization of zebrafish tumor models using Jones-matrix optical coherence tomography,” Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480D (7 March 2022).

28. Ibrahim Abd El-Sadek, Arata Miyazawa, Tomoko Mori, Larina Tzu-Wei Shen, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno “Three dimensional tumor spheroid drug response evaluation using OCT based tissue viability evaluation method,” Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480A (7 March 2022).
29. **Pradipta Mukherjee**, Shinchi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Shuichi Makita, Ibrahim Abd El-Sadek, Arata Miyazawa, Lida Zhu, Tetsuro Oshika, and Yoshiaki Yasuno “Label-free assessment of renal function with unilateral ureteral obstruction (UUO) model by optical coherence microscopy,” Proc. SPIE 11972, Label-free Biomedical Imaging and Sensing (LBIS) 2022, 1197208 (2 March 2022).
30. Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Arata Miyazawa, Kiriko Tomita, Shuichi Makita, and Yoshiaki Yasuno “Sparse frame acquisition toward fast volumetric dynamic optical coherence tomography imaging,” Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480I (7 March 2022).
31. Lida Zhu, Shuichi Makita, Antonia Lichtenegger, Junya Tamaoki, Kensuke Oikawa, **Pradipta Mukherjee**, Yiheng Lim, Makoto Kobayashi, Jiajie Luo, and Yoshiaki Yasuno “Multi-focus average for multiple scattering noise suppression in optical coherence tomography,” Proc. SPIE 11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, 119480M (7 March 2022).
32. Ibrahim G. Abd El-Sadek, Arata Miyazawa, Tomoko Mori, Larina Shen, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno “Label-free three dimensional optical coherence tomography (OCT-) based imaging method for drug response evaluation of human derived tumor spheroids,” Proc. SPIE PC11972, Label-free Biomedical Imaging and Sensing (LBIS) 2022, PC119720N (2 March 2022).
33. Thitiya Seesan, Ibrahim El-Sadek, **Pradipta Mukherjee**, Kensuke Oikawa, Prathan Buranasiri, and Yoshiaki Yasuno “Quantitative scatterer density estimator to characterize tissue-based phantom in optical coherence tomography,” Proc. SPIE PC11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, PC1194816 (7 March 2022).
34. Lida Zhu, Shuichi Makita, Daisuke Oida, Arata Miyazawa, Kensuke Oikawa, **Pradipta Mukherjee**, Antonia Lichtenegger, Martin Distel, and Yoshiaki Yasuno “Depth-of-focus extended multi-contrast imaging by polarization-sensitive optical coherence tomography,” Proc. SPIE PC11963, Polarized Light and Optical Angular Momentum for Biomedical Diagnostics 2022, PC119630I (7 March 2022).
35. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Ibrahim Abd El-Sadek, Arata Miyazawa, Lida Zhu, Shuichi Makita, Tetsuro Oshika, and Yoshiaki Yasuno “Three-dimensional intracellular motility imaging in non-alcoholic fatty liver disease (NAFLD) using optical coherence tomography,” Proc. SPIE PC11948, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVI, PC119480S (7 March 2022).
36. Antonia Lichtenegger, Junya Tamaoki, Tomoko Mori, **Pradipta Mukherjee**, Lida Zhu, Lixuan Bian, Ibrahim Abd El-Sadek, Shuichi Makita, Satoshi Matsusaka, Makoto Kobayashi,

- Bernhard Baumann, and Yoshiaki Yasuno “Longitudinal xenograft zebrafish investigation using polarization-sensitive Jones-matrix optical coherence tomography,” Proc. SPIE 12223, Interferometry XXI, 122230F (3 October 2022).
37. Antonia Lichtenegger, **Pradipta Mukherjee**, Junya Tamaoki, Lida Zhu, Lixuan Bian, Ibrahim Abd El-Sadek, Shuichi Makita, Konrad Leskovar, Makoto Kobayashi, Bernhard Baumann, and Yoshiaki Yasuno “Non-invasive, structural and functional imaging of in vivo zebrafish in various development stages using Jones matrix optical coherence tomography,” Proc. SPIE PC11972, Label-free Biomedical Imaging and Sensing (LBIS) 2022, PC119720P (2 March 2022).
 38. Lida Zhu, Shuichi Makita, Yiheng Lim, Antonia Lichtenegger, Junya Tamaoki, **Pradipta Mukherjee**, Makoto Kobayashi, Jiajie Luo, and Yoshiaki Yasuno, “Multi-focus average for multiple noise suppression in optical coherence tomography,” OSA Biophotonics Congress: Biomedical Optics, CS2E.3 (2022).
 39. Shumpei Kojima, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Shuichi Makita, Yoshiaki Yasuno, and Yiheng Lim, “Dynamics Imaging of Plant Maturity by Optical Coherence Tomography” OSA Biophotonics Congress: Biomedical Optics, CTu2E.3 (2022).
 40. Antonia Lichtenegger, Junya Tamaoki, **Pradipta Mukherjee**, Tomoko Mori, Lida Zhu, Lixuan Bian, Ibrahim Abd El-Sadek, Shuichi Makita, Satoshi Matsusaka, Makoto Kobayashi, Bernhard Baumann, and Yoshiaki Yasuno, “In vivo investigation of a tumor xenograft zebrafish model using multi-contrast polarization-sensitive optical coherence tomography,” OSA Biophotonics Congress: Biomedical Optics, CS4E.1 (2022).
 41. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Shuichi Makita, Ibrahim Abd El-Sadek, Arata Miyazawa, and Yoshiaki Yasuno, “Revealing renal tubular structural metabolism without labeling by functional optical coherence tomography,” Optics and Photonics Japan (2022).
 42. Ibrahim Abd El-Sadek, Rion Morishita, Tomoko Mori, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno, “Anti-cancer drugs testing using label-free dynamic optical coherence tomography ,” Optics and Photonics Japan (2022).
 43. Thitiya Seesan, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Yiheng Lim, Shuichi Makita, Prathan Buranasiri, and Yoshiaki Yasuno, “A noise modeling for improving the estimation accuracy of the scatterer density estimation in optical coherence tomography,” Optics and Photonics Japan (2022).
 44. Kiriko Tomita, Shuichi Makita, Naoki Fukutake, Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Antonia Lichtenegger, Junya Tamaoki, Lixuan Bian, Makoto Kobayashi, Tomoko Mori, Satoshi Matsusaka and Yoshiaki Yasuno, “Differential contrast imaging by optical coherence tomography based on formulation with disperse-scatterer model,” Optics and Photonics Japan (2022).
 45. Yiheng Lim, Shumpei Kojima, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Shuichi Makita, and Yoshiaki Yasuno, “Biological activity imaging of cotyledon vessels in sprouts by dynamic optical coherence tomography,” Optics and Photonics Japan (2022).
 46. Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Tomoko Mori, Suzuki Toshio, Antonia Lichtenegger, Lim YiHeng, Zhu Yiqiang, Shuichi Makita, Yuki Yamamoto, Tetsuharu

- Nagamoto, Satoshi Matsusaka, and Yoshiaki Yasuno, “Low- and high-resolution volumetric dynamic optical coherence tomography of in vitro cell cultures,” *Optics and Photonics Japan* (2022).
47. Shuichi Makita, Lida Zhu, **Pradipta Mukherjee**, Yiheng Lim, Rion Morishita, Ibrahim Abd El-Sadek, and Yoshiaki Yasuno, “In vivo digital refocusing of optical coherence tomography using Lissajous scan,” *Optics and Photonics Japan* (2022).
 48. Lida Zhu, Shuichi Makita, Daisuke Oida, Arata Miyazawa, Kensuke Oikawa, **Pradipta Mukherjee**, and Yoshiaki Yasuno “Multi-contrast imaging with computational refocusing in polarization-sensitive optical coherence tomography,” *Proc. SPIE 11630, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXV*, 1163020 (8 March 2021).
 49. Yoshiaki Yasuno, Ibrahim Abd El-Sadek, Arata Miyazawa, Larina Tzu-Wei Shen, Thitiya Seesan, Lida Zhu, Daisuke Oida, Kensuke Oikawa, Shuichi Makita, Shinichi Fukuda, Toshiharu Yamashita, **Pradipta Mukherjee**, Tetsuro Oshika, Prathan Branasiri, and Satoshi Matsusaka “Multi-functional optical coherence microscopy for in-vitro and ex-vivo tissue investigation,” *Proc. SPIE 11924, Optical Coherence Imaging Techniques and Imaging in Scattering Media IV*, 119240H (9 December 2021).
 50. **Pradipta Mukherjee**, Arata Miyazawa, Shinichi Fukuda, Toshiharu Yamashita, Ibrahim Abd El-Sadek, Shuichi Makita, Tetsuro Oshika, and Yoshiaki Yasuno “Three-dimensional imaging of mouse liver dynamics by polarization-sensitive optical coherence tomography,” *Proc. SPIE 11655, Label-free Biomedical Imaging and Sensing (LBIS) 2021*, 116550O (5 March 2021).
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 52. **Pradipta Mukherjee**, Arata Miyazawa, Shinichi Fukuda, Toshiharu Yamashita, Ibrahim Abd El Sadek, Shuichi Makita, Tetsuro Oshika, and Yoshiaki Yasuno, “Volumetric multi-contrast dynamics imaging for ex vivo liver microvasculature activity visualization using Jones matrix optical coherence tomography,” *Proc. SPIE 11630, 116301Q*, (2021).
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 54. **Pradipta Mukherjee**, Shinichi Fukuda, Donny Lukmanto, Toshiharu Yamashita, Kosuke Okada, Shuichi Makita, Ibrahim Abd El-Sadek, Arata Miyazawa, Lida Zhu, Tetsuro Oshika, and Yoshiaki Yasuno, “3D label-free metabolic imaging in non-alcoholic fatty liver disease model by optical coherence microscopy,” *Optics and Photonics Japan* (2021).
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56. Ibrahim Abd El-Sadek, Arata Miyazawa, Larina Tzu-Wei Shen, Shuichi Makita, **Pradipta Mukherjee**, Antonia Lichtenegger, Satoshi Matsusaka, and Yoshiaki Yasuno, “Label-free three-dimensional evaluation of tumor spheroid drug response using dynamics optical coherence tomography,” *Optics and Photonics Japan* (2021).
57. Antonia Lichtenegger, **Pradipta Mukherjee**, Junya Tamaoki, Lida Zhu, Lixuan Bian, Ibrahim Abd El-Sadek, Shuichi Makita, Konrad Leskovar, Makoto Kobayashi, Bernhard Baumann, Yoshiaki Yasuno, “Structural, and functional investigation of in vivo zebrafish using Jones matrix optical coherence tomography,” *Optics and Photonics Japan* (2021).
58. Lida Zhu, Shuichi Makita, **Pradipta Mukherjee**, Thitiya Seesan, Arata Miyazawa, Jiajie Luo, and Yoshiaki Yasuno, “Focal-shifting complex fusion for multiple scattering noise suppression in optical coherence tomography,” *Optics and Photonics Japan* (2021).
59. Rion Morishita, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Arata Miyazawa, Kiriko Tomita, Shuichi Makita, and Yoshiaki Yasuno, “Sparse frame acquisition for optical coherence tomography toward three-dimensional tissue dynamics imaging,” *Optics and Photonics Japan* (2021).
60. Thitiya Seesan, Ibrahim Abd El-Sadek, **Pradipta Mukherjee**, Kensuke Oikawa, Prathan Buranasiri, and Yoshiaki Yasuno, “Evaluation of scatterer density estimator for tissue phantom visualization of optical coherence tomography,” *Optics and Photonics Japan* (2021).
61. **Pradipta Mukherjee**, Arata Miyazawa, Larina Shen, Shinichi Fukuda, Toshiharu Yamashita, Yuki Oka, Ibrahim Abd El-Sadek, Shuichi Makita, Satoshi Matsusaka, Tetsuro Oshika, Hideaki Kano, and Yoshiaki Yasuno “Quantification of ex-vivo tissue activity by polarization dynamics imaging using Jones matrix optical coherence tomography,” *Proc. SPIE 11521, Biomedical Imaging and Sensing Conference 2020, 115210R* (15 June 2020).
62. Lida Zhu, Arata Miyazawa, **Pradipta Mukherjee**, Ibrahim Abd El-Sadek, Kensuke Oikawa, Daisuke Oida, and Yoshiaki Yasuno “Numerical jitter estimation for swept source optical coherence tomography,” *Proc. SPIE 11521, Biomedical Imaging and Sensing Conference 2020, 115210T* (15 June 2020).
63. **Pradipta Mukherjee**, Arata Miyazawa, Shinichi Fukuda, Toshiharu Yamashita, Ibrahim Abd El Sadek, Shuichi Makita, Tetsuro Oshika, and Yoshiaki Yasuno, “3D label-free dynamics imaging of liver microvasculature by optical coherence microscopy,” *Optics and Photonics Japan, Osaka* (2020).
64. Ibrahim Abd El-Sadek, Arata Miyazawa, Larina Tzu-Wei Shen, Shuichi Makita, **Pradipta Mukherjee**, Satoshi Matsusaka, and Yoshiaki Yasuno, “Optical coherence tomography based tissue dynamics imaging method for cross-sectional and three-dimensional evaluation of tumor spheroid activity,” *Optics and Photonics Japan, Osaka* (2020).
65. Lida Zhu, Shuichi Makita, Daisuke Oida, Arata Miyazawa, Kensuke Oikawa, **Pradipta Mukherjee**, and Yoshiaki Yasuno, “Multi-contrast tissue imaging with numerical refocus based on polarization-sensitive optical coherence tomography,” *Optics and Photonics Japan, Osaka* (2020).
66. **Pradipta Mukherjee**, Arata Miyazawa, Ibrahim Abd El-Sadek, Larina Shen, Shinichi Fukuda, Toshiharu Yamashita, Yuki Oka, Shuichi Makita, Satoshi Matsusaka, Tetsuro Oshika, Hideki

Kano, and Yoshiaki Yasuno, “Birefringence dynamics imaging for ex vivo tissue activity quantification using polarization-sensitive optical coherence tomography,” Optics and Photonics Japan, Osaka (2019).

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68. **Pradipta Mukherjee**, Tomohisa Horiguchi, Shuhei Shibata, Nathan Hagen, and Yukitoshi Otani, “Determination of mechanical properties of biological tissues using a reflection type Mueller matrix microscope,” International Workshop on Bioimaging, Utsunomiya, Japan (2019).
69. **Pradipta Mukherjee**, Nathan Hagen, and Yukitoshi Otani, “Glucose sensing in the presence of scattering particles using decomposition of partial Mueller matrix,” Proc. SPIE, 107110, 107110Y (2018).
70. **Pradipta Mukherjee**, Nathan Hagen, and Yukitoshi Otani, “Decomposition of partial Mueller matrix to simultaneously measure linear birefringence and depolarization characteristics in real time,” International Symposium of Optomechatronics Technologies, Itabashi, Tokyo (2016).
71. **Pradipta Mukherjee** and Yukitoshi Otani, “Dual photoelastic modulator and rotating wave plate-based Mueller matrix polarimeter to measure the optical properties of scattering media,” Japanese Society of Applied Physics, Ookayama, Tokyo (2016).
72. **Pradipta Mukherjee** and Yukitoshi Otani, “A Mueller matrix polarimeter based on dual photoelastic modulators and rotating wave plate,” Optics and Photonics Japan, Tokyo (2015).

AWARDS

Young Faculty Award 2024

– by Indian Institute of Technology Delhi

JSPS Postdoctoral Fellowship (Declined) 2023

– By Japan Society for the Promotion of Science

Doctoral research fellowship – “Japanese Government (Monbukagakusho: MEXT)” Scholarship

- Ministry of Education Culture, Sports, Science and Technology– Govt. of Japan (MEXT), April 2015 – March 2018.

National Merit-Cum Scholarship

- Government of India, 2005-2007.

OSA Reviewer Recognition Award

- By the Optica, Optical Society of America, Year 2021, 2022.

PROFESSIONAL ACTIVITIES

- Journal Reviewer: Biomedical Optics Express, Optics Express, Applied Optics, Optics Letters
- Society Membership: SPIE, OPTICA (OSA)
- Conference Organizing Committee Member: Photonics Online Meetup (POM) 2023

HARDWARE AND
SOFTWARE SKILLS

Instrument development:

- Technological development of optical coherence tomographic microscope.
- Design and implement a complete and partial Mueller matrix polarimeter using dual photoelastic modulators and rotating wave plates to characterize sample polarization properties fully.
- Developed an epi-illumination Mueller matrix microscope for elastographic measurement of biological tissues.

Programming Languages:

- Python, MATLAB, Labview, Maxima, Zemax, T_EX (L^AT_EX, B_IB_TE_X), Git

Operating System:

- Microsoft Windows, Apple Mac OS

LANGUAGES

- Bengali (mother tongue), Hindi
- Spoken and written English (Advanced level)
- Spoken Japanese (Basic level)