

# Sino-German Symposium Biomedical Photonics

## 生物医学光子学中德学术研讨会

18-19<sup>th</sup> SEPT. 2024, XI'AN, CHINA



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Institute of Biomedical Photonics and Sensing  
Xi'an Jiaotong University  
西安交通大学生物医学光子学与传感研究所



Institute of Biomedical Optics  
University of Luebeck  
吕贝克大学生物医学光学研究所

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# PROGRAM



**Wednesday, 18.09.2024 08:45 – 18:00**

8:45 Opening, hosted by Zhenxi Zhang

## Session 1 Laser micro-nano surgery (chaired by Cuiping Yao)

9:00	Alfred Vogel <i>University of Luebeck</i>	Time-resolved imaging of laser microbeam interactions with cells and tissues - a 20 years journey
9:30	Shaoqun Zeng <i>Huazhong Uni. of Sci. &amp; Tech.</i>	Fast scanning of femtosecond laser pulses for nonlinear laser surgery
10:00	Sebastian Freidank <i>University of Luebeck</i>	High-speed photography and videography exploring the mechanisms of corneal laser dissection
10:25	Coffee   Tea break	

## Session 2 SRS imaging, Molecular diagnosis & therapy (chaired by Alfred Vogel)

10:40	Minbiao Ji <i>Fudan University</i>	Biomedical applications of stimulated Raman scattering (SRS) microscopy in interdisciplinary research
11:10	Cuiping Yao <i>Xi'an Jiaotong University</i>	Photodynamic therapy: efficiency improvement and clinic applications
11:40	Fei Hu <i>Xi'an Jiaotong University</i>	Key technologies and applications of molecular diagnostics and biological microfluidics
12:05	Lunch break at Nanyang Hotel	

## Session 3 Nonlinear imaging (chaired by Shaoqun Zeng)

14:00	Junle Qu <i>Shenzhen University</i>	Super-resolution optical imaging for live cell and <i>in vivo</i> applications
14:30	Sebastian Karpf <i>University of Luebeck</i>	High-speed imaging using spectro-temporal scanning
15:00	Jonas Jurkevicius <i>University of Luebeck</i>	Spectrotemporal laser imaging by diffracted excitation (SLIDE) for smart microscopy
15:25	Xiao-Xuan Liang <i>University of Luebeck</i>	Photodamage in nonlinear microscopy via free-electron and thermally mediated pathways
15:50	Coffee   Tea break	

## Session 4 Super-resolution, ultrafast imaging and Optical clearing (chaired by Gereon Huettmann)

16:10	Peng Xi <i>Peking University</i>	Super-resolution structured illumination microscopy in XYZλθT dimensions
16:40	Norbert Linz <i>University of Luebeck</i>	Speckle-free ultrafast high-resolution imaging of laser-induced effects in liquids
17:05	Dan Zhu <i>Huazhong Uni. of Sci. &amp; Tech.</i>	Tissue optical clearing for 3D imaging of whole organs
17:30	Group photo and closing of the day	
18:00	Dinner at Nanyang Hotel	



**Thursday, 19.09.2024 08:55 – 18:00**  
**8:55 Opening for the day**

## Session 5 Optical coherence tomography (chaired by Peng Xi)

9:00	Robert Huber <i>University of Luebeck</i>	New light sources for MHz-OCT, direct 2-photon FLIM and stimulated Raman imaging
9:30	Ping Xue <i>Tsinghua University</i>	Multifunctional OCT for intraoperative tumor diagnosis and rapid pathology
10:00	Marie Klufits <i>University of Luebeck</i>	Fourier domain mode locked (FDML) lasers at unconventional wavelengths
10:25	Coffee   Tea break	

## Session 6 Optical coherence tomography (chaired by Robert Huber)

10:40	Gereon Hüttmann <i>University of Luebeck</i>	Holographic OCT - Using the phase for extended depth of focus and functional imaging
11:10	Peng Li <i>Zhejiang University</i>	OCT functional imaging and its application in blood circulation
11:40	Noah Heldt <i>University of Luebeck</i>	Dynamic OCT
12:05	Lunch break at Nanyang Hotel	

## Session 7 Optical coherence tomography (chaired by Junle Qu)

14:00	Ralf Brinkmann <i>University of Luebeck</i>	Brain tumor detection by optical coherence tomography (OCT) and elastography (OCE)
14:30	Maximilian Neidhardt <i>Hamburg Uni. of Tech.</i>	Optical coherence elastography (OCE) imaging with Deep Learning
14:55	Awanish P. Singh <i>University of Luebeck</i>	Endoscopic probe for real-time 3D visualization and multi-MHz OCT Imaging of ex-vivo colon
15:20	Coffee   Tea break	

## Session 8 SIM, photoacoustic and DOT imaging (chaired by Ralf Brinkmann)

15:40	Ming Lei <i>Xi'an Jiaotong University</i>	High speed image reconstruction for structured illumination microscopy
16:05	Qiangzhou Rong <i>Xi'an Jiaotong University</i>	Multimodal photoacoustic bio-imaging and ultrasound bioprinting
16:30	Lu Zhang <i>Xi'an Jiaotong University</i>	Hessian intensity-only diffraction tomography for label-free 3D refractive index reconstruction with LED microscopy
17:00	End of Symposium, Co-hosted by Cuiping Yao and Alfred Vogel	
18:00	Dinner at Nanyang Hotel	



## Co-chair of the symposium

### Prof. Dr. Zhenxi Zhang

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**Zhenxi Zhang** is Senior Professor at the Institute of Biomedical Photonics and Sensing, School of Life Science and Technology, Xi'an Jiaotong University, China. He received his Ph.D. in Biomedical Engineering and Instrumentation from Xi'an Jiaotong University, China in 1990. He was the associate dean of School of Life Science and Technology and the director of the Institute of Biomedical Analytical Technology and Instrumentation from 2008 to 2018 at Xi'an Jiaotong University. He has conducted researches in several Germany Universities including University of Stuttgart, the GSF-National Research Center for Environment and Health (Muenich), Robert Roessle Cancer Clinic of the Virchow, University Clinic of the Humboldt University in Berlin, Wilhelmshaven University of Applied Sciences, University of Lübeck and Lübeck University of Applied Sciences. His research interests are mainly in biomedical optics, optical biophysics, biomedical optical imaging and spectral analysis method. He published more than 80 peer-reviewed papers and 4 books on Biomedical Photonics and Nanomedicine. He has been a member of the University Teaching Instruction Committee of the Chinese Education Ministry for Biomedical Engineering (2006-2010), the deputy director of the Internet Cooperative Research Center of the Education Ministry, consultant expert of the Chinese Technology Association, the vice-chairmen and member of the Committee for Biomedical Optics of Chinese Optical Society, and associate chief editor of Chinese Journal of Lasers.

## Co-chair of the symposium

### Prof. Dr. Alfred Vogel

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**Alfred Vogel** is Senior Professor at the Institute of Biomedical Optics (BMO), University of Luebeck, Germany. From 2010 to 2019 he served as Director of the BMO and Deputy CEO of the Medical Laser Center Luebeck GmbH. Dr. Vogel is fellow of Optica (formerly OSA) and of SPIE. He published 102 peer-reviewed papers, 7 book chapters, and 52 proceedings papers (>16000 citations, h=52 according to Google Scholar, and reviewed for 62 international journals and 32 institutions. He holds 15 patents and has filed another 7 patent applications. He has delivered more than 200 plenary, key note, and invited talks. Dr. Vogel was editorial board member for the Journal of Biomedical Optics from 2002-2019, served as associate editor of Optics Express from 2006-2009, and is advisory editor of Biomedical Optics Express since its launching in 2010. Dr. Vogel has made major experimental and theoretical contributions to linear and nonlinear pulsed laser interactions with water, biomolecules, cells and biological tissues. They range from free-electron-mediated photochemical modifications through photothermal alterations to laser-induced breakdown. He invented new technologies for stroboscopic and ultra-high-speed imaging and schlieren photography of laser-induced cavitation and ablation, as well as interferometric techniques to characterize these processes with a few nanometer resolution. Insights gained on laser tissue interactions were applied to improve pulsed laser tissue ablation, plasma-mediated intraocular and refractive surgery, molecular modifications within ocular tissues and cells, and nonlinear microscopy.



## Biographies of speakers in sequence of talks

### Prof. Dr. Shaoqun Zeng

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**Shaoqun Zeng** is Changjiang Professor, SPIE Fellow, OSA Fellow. Department of Biomedical Engineering, Huazhong University of Science and Technology, Wuhan National Laboratory for Optoelectronics. Director of Key Laboratory of Biomedical Photonics, Ministry of Education. He was born in 1969, obtained his BE degree and doctoral degree from Huazhong University of Science and Technology in 1990, and 1996, respectively. Research interest: biomedical optics. He is a pioneer in femtosecond laser inertial-free scanning technology. He has developed femtosecond laser scanning system with novel dispersion compensation, which is applied in fields such as microscopy imaging, laser surgery, and laser micro/nano fabrication.

### Dipl. Sebastian Freidank

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**Sebastian Freidank** is Senior Engineer at the Institute of Biomedical Optics (BMO), University of Luebeck, Germany. During the past 18 years, he contributed to various highly interesting and successful research projects and acquired experimental and theoretical skills in the field of optics, laser physics, laser-tissue interaction, cell biology and in the time-resolved study of laser-induced cavitation bubbles. His particular ability and expertise lies in the development of sophisticated experimental arrangements and the performance of challenging experiments. Furthermore, he is a Co-Investigator in several federal and industrial R&D projects exploring plasma-mediated corneal surgery, and material processing in transparent dielectrics.



### Prof. Dr. Minbiao Ji

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**Minbiao Ji** received B.S. degree in Physics at Peking University, and his Ph.D degree in Physics at Stanford University, with his research focusing on ultrafast laser spectroscopy. Afterwards, he joined the research group of Prof. Sunney Xie at Harvard University as a postdoctoral research fellow, working on coherent Raman scattering microscopy. Minbiao Ji is currently a Professor in the Department of Physics at Fudan University in Shanghai. His current research is focused on developing novel nonlinear optical spectroscopy and microscopy tools to study biomedical problems and material sciences, including nonlinear optical microscopy, stimulated Raman scattering (SRS) microscopy and transient absorption microscopy for label-free tissue histology and AI-assisted disease diagnosis.

### Prof. Dr. Cuiping Yao

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**Cuiping Yao** is Professor at Xi'an Jiaotong University. She received Ph.D in Biomedical Engineering from Xi'an Jiaotong University in 2005. She was a visiting scientist at the Institute of Biomedical Optics, University of Luebeck in 2005 and 2013 with collaboration of Prof. Dr. Gereon Hüttmann, and a visiting scientist at the University of Dartmouth, U.S.A. in 2018-2019 with collaboration of Prof. Dr. Brian W. Pogue. She has been the Deputy Director of the Institute of Biomedical Photonics and Sensing, Xi'an Jiaotong University. She has been awarded six times the National Natural Science Foundation of China funded research programs in the area of nanoparticles aided cancer therapy and Cherenkov radiation-activated cancer photodynamic therapy. These projects have resulted in a number of high impact publications in Optics Letters, Journal of Biophotonics, ACS Materials & Interfaces, Advanced Healthcare Materials, Nanoscale and Nanotechnology et. al. Her research focuses on nanoparticles aided cancer diagnosis and therapy, especially on effects of the interaction between laser and gold nanoparticles and their biomedical applications. Her major contribution to science is as following: 1) Development of inorganic nanoparticles aided photodynamic therapy of cancer; 2) Combination of PDT and immunotherapy; 3) Systematic study of cell optoporation with laser activated gold nanoparticles.



### Assoc. Prof. Dr. Fei Hu

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**Fei Hu** is associate researcher and deputy director of the Institute of Biological Detection and Instrumentation at Xi'an Jiaotong University. He has a long-term commitment to biomedical detection equipment, microfluidics and micro-analytical systems. He is selected for the "Young Talent Support Project" of the China Association for Science and Technology, honored as a "Shaanxi Youth Star of Science and Technology" in 2024, a member of the 8th "Top Ten Academic Newcomers" of Xi'an Jiaotong University, and an awardee of the "Medical-Industrial Intersection, Ten Innovative Newcomers" and other talents and honors. Focusing on the national high-performance precision medical devices and the major needs of people's lives and health, he has presided over the National Key Research and Development Program, the National Natural Science Foundation of China's youth and General Funds, the national major military projects, postdoctoral funds, the key research and development program of Shaanxi Province, and other scientific research projects. He has developed a series of nucleic acid detection and gene analysis instruments and achieved application. He has been awarded the second prize of National Scientific and Technological Progress and the first prize of Shaanxi Provincial Scientific and Technological Progress. In the past five years, he has published more than 10 articles, applied for and authorized more than 20 Chinese invention patents.



### Prof. Dr. Junle Qu

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**Junle Qu** is Chair Professor and the director of the Center for Biomedical Photonics at the College of Physics and Optoelectronic Engineering, Shenzhen University. Fellow of the International Society for Optical Engineering (SPIE), the Optical Society of America (OSA), the Chinese Optical Society (COS), and the Chinese Optical Engineering Society (COES). He serves as the director of the Biomedical Photonics Committee of the Chinese Optical Society and is the founding Executive Editor-in-Chief of PhotoNiX: Life. Additionally, he is an Associate Editor of Biomedical Optics Express and the Associate Editor-in-Chief of the Journal of Innovative Optical Health Sciences (JIOHS). His research interests encompass multimodal nonlinear optical imaging, fluorescence lifetime imaging, super-resolution optical imaging, nanobiophotonics technology, and light-induced therapy. He has pioneered innovative methods for biomedical optical imaging and nonlinear in situ induced photodynamic therapy, leading to the publication of over 500 scientific papers in peer-reviewed journals. His works have been cited more than 21,000 times.

### Prof. Dr. Sebastian Karpf

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**Sebastian Karpf** is Professor at the University of Luebeck. He obtained his Ph.D in 2015 working on stimulated Raman microscopy in the group of Prof. Robert Huber at the Ludwig-Maximilians-University in Munich, Germany. He then joined the Photonics Lab of Prof. Bahram Jalali at the University of California, Los Angeles (UCLA) where he developed the SLIDE technology for high-speed Two-Photon microscopy, FLIM and inertia-free LiDAR. Since 2018 he is a Junior professor at the Institute of Biomedical Optics (BMO) at the University of Luebeck. He continues to work on high-speed multi-photon microscopy, imaging flow cytometry, volumetric imaging and biomedical optics application in biology and medicine.



### Dr. Jonas Jurkevicius

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**Jonas Jurkevicius** is a postdoctoral researcher at the Institute of Biomedical Optics (BMO), University of Lübeck, Germany. His PhD thesis (2016, Vilnius University) was focused on the problem of efficiency drop in wide-bandgap semiconductors, investigating via optical methods the carrier localization conditions and role of stimulated emission in III-nitride systems. While subsequently working as a research fellow in the Institute of Photonics and Nanotechnology, he became interested in the application of nonlinear optics in bio-imaging and the development of novel methods for investigating biological objects – it is this very interest that led him to join the BMO as a postdoc in 2022, in order to work with the emerging spectro-temporal laser imaging by diffracted excitation (SLIDE) technology. Currently he is working on the development of adaptive capabilities of SLIDE microscopy in an effort to bring SLIDE a step closer towards sample-responsive, smart microscopy.

### Dr. Xiao-Xuan Liang

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**Xiao-Xuan Liang**, is Senior Scientist at the Institute of Biomedical Optics, University of Luebeck, Germany. He received Ph.D. degree in Biophysics from Xi'an Jiaotong University in 2019. He was a visiting doctoral student in Prof. Alfred Vogel's group at the Institute of Biomedical Optics, University of Luebeck from 2007 to 2010. He has published 2 book chapters and 11 scientific articles in peer-reviewed journals, such as PNAS, Optica and Journal of Fluid Mechanics. He has delivered 8 scientific talks including 2 invited. Dr. Liang is youth editorial board member of Chinese Journal of Lasers, member of OPTICA (OSA), SPIE and the Society of Chinese Physicists in Germany. He is reviewer for multiple journals such as Optica, Optics Express, JFM, Physics of Fluids and Applied Optics. His research focuses on theoretical modeling of laser-induced optical breakdown events in water, covering plasma generation, bubble formation and shockwave emission; modeling of photodamage in nonlinear microscopy; and modeling of thermoplasmonics and off-resonance effects around metallic nanoparticles. The insights gained from modeling were applied to improve the cellular and tissue surgery, and to understanding laser-induced molecular modifications.



### Prof. Dr. Peng Xi

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**Peng Xi** is Boya Professor at the College of Future Technology, Peking University, China. His research interest is on the development of optical super-resolution microscopy techniques. He has been awarded the National Distinguished Young Scholar. He is elected as the Fellow of IAAM in 2022. He is the Chief scientist of the Key Research and Development Plan of the Ministry of Science and Technology. He is on the editorial board of 5 SCI-indexed journals such as Light and Advanced Photonics. He has published over 90 scientific journal papers on peer-reviewed journals including Nature, Nature Methods, etc., and the published articles have been cited for more than 6,000 times. He has been granted three American patents and nineteen Chinese patents, and delivered many plenary talks on international conferences hosted by SPIE and OPTICA (OSA).

### Dr. Norbert Linz

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**Norbert Linz** is Senior Scientist and Group Leader at the Institute of Biomedical Optics (BMO), University of Luebeck, Germany. He obtained his physics diploma in 2004 at the Technical University Kaiserslautern, where he had built a femtosecond laser system. He studied for the Ph.D. degree at the University of Luebeck under the tutelage of Prof. Alfred Vogel and obtained his doctorate in 2010 with distinction "summa cum laude". His contributions as postdoctoral researcher in Prof. Vogel's group has led to innovative strategies for improving cell surgery and refractive surgery, as well as to advances in optical breakdown threshold spectroscopy of aqueous media. During the last years, he worked as Co-PI on the experimental and theoretical investigation of the mechanisms of free-electron-mediated modifications of biomolecules in nonlinear microscopy. He published 13 peer-reviewed papers, 1 book chapter, and 4 proceedings papers (1022 citations, h = 11 according to Google Scholar) and has delivered 14 invited and 13 regular talks at international conferences. Dr. Linz is a member of The International Society for Optics and Photonics (SPIE) and since 2019 he chairs the SPIE BIOS conference "Optical Interactions with Tissue and Cells" at Photonics West.

**Prof. Dr. Dan Zhu**

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**Dan Zhu** is SPIE and OPTICA Fellow, Distinguished Professor of Huazhong University of Science and Technology, Director of Advanced Biomedical Imaging Facility, and Vice-director of Wuhan National Laboratory for Optoelectronics. During the past years, she has been focusing on tissue optical clearing imaging, for in vivo cortical neurovascular structure and function, as well as 3D structure of organs. She has published more than 200 peer-review papers in Science Advances, Nature Communications et al, and 80 plenary or invited talk on international conferences, including SPIE Bios Hot Topic. She serves as Vice-President and Secretary General of the Biomedical Photonics Committee of the Chinese Optical Society and the Vice-President of the microcirculation Drug Research Committee of the Chinese Microcirculation Society. She is an Associate editor of Journal of Biomedical Optics, Editorial Member or Guest Editor of Biomedical Optics Express, Scientific Reports, Journal of Innovative Optical Health Sciences, and Frontier of Optoelectronics etc.

**Prof. Dr. Robert Huber**

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**Robert Huber** studied general physics with major in astrophysics and applied nuclear physics at the Ludwig-Maximilians-Universität (LMU) in Munich, Germany, where he received his Diplom for work on laser assisted nanostructuring with scanning tunneling- and atomic force microscopes at the chair of Prof. J. Feldmann. In 2002 he received his PhD (Dr. rer. nat.) for work on novel non-collinear optical parametric amplifiers and ultrafast electron transfer processes at dye-semiconductor surfaces in 2002 at the Institute of Medical Optics of Prof. Zinth in the group of Prof. Wachtveitl. Robert Huber then worked for one year as Postdoc at the Institute of Physical and Theoretical Chemistry at the J. W. Goethe University in Frankfurt in the group of Prof. J. Wachtveitl. From 2003 through 2007, he joined the group of Prof. J. G. Fujimoto at the Massachusetts Institute of Technology as postdoc

and developed various new wavelength swept lasers for optical coherence tomography (OCT). From 2007 to 2013 he led an independent research group at the LMU Munich in the Emmy Noether program of the German Research Foundation (DFG) and as an ERC Starting grant group leader. His group was partner in the European consortium “FUN-OCT” in FP7. The current research of Huber’s group focuses on the development and the application of new fiber based laser light sources for OCT, multi-photon and Raman imaging. He is the inventor of the Fourier Domain Mode Locked (FDML) laser and pioneered the field of Megahertz Optical coherence tomography (MHz-OCT), which he successfully commercialized by cofounding the company Optores GmbH. Robert Huber received for his group a total of 11M€ funding from DFG (Emmy Noether Sachbeihilfe), BMWI (EXIST), BMBF, European Union (ERC STG, ERC, CoG, FP7, Horizon 2020, ETN, Interreg), Thorlabs GmbH, and Freunde und Förderer der Augenklinik München. He coauthored more than 150 peer reviewed publications, gave more than 60 invited talks and holds 19 patents. His papers received 12845 citations and he has an h-index of 56. He received two ERC grants (StG 2010 and CoG 2014) by the European Union. In 2011 and again in 2012 he was ranked amongst the top 40 young talents in the field of science in Germany by the business magazine “Capital”. He received the Albert-Weller award 2003, the Rudolf-Kaiser Preis 2008, the Klung-Wilhelmy-Weberbank award 2013. In 2016 he was awarded the title “Schleswig Holstein Excellence Chair” and in 2017 he received the European Inventor award 2017 jointly with James Fujimoto and Eric Swanson. In 2021 Robert Huber became fellow of OPTICA (OSA).

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**Ping Xue** received the B.S. in applied physics in 1988 and the Ph.D. degree in optics in 1993 from Tsinghua University, Beijing, P.R. China. He was a lecturer from 1993 to 1996 and an associate professor from 1996 to 2000 with the Department of Physics, Tsinghua University. From 2001 to 2002, he was a visiting scientist in the Research Laboratory of Electronics at MIT. Since 2000, he has been a full professor with the Department of Physics, Tsinghua University. He was the Deputy Director in the Key Laboratory of Atomic and Molecular Nanosciences, Ministry of Education (2002-2011) and the State Key Laboratory of Low-Dimensional Quantum Physics (2011-2016). He is the co-author of two books, more than 160 articles, and more than 25 inventions. His research interests include biomedical imaging, optical coherence tomography, advanced laser technology, laser spectroscopy and optical informatics.





### Ms. Marie Klufts

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**Marie Klufts** is currently a Ph.D student at the Institute of Biomedical Optics (BMO), University of Luebeck, Germany. After completing a preparatory class specialized in mechanics and physics, she pursued a degree in biomedical engineering in France. During these five years, she gained valuable experience through multiple internships, concentrating on photonics, in various laboratories in France and New Zealand. Currently, she is undertaking her doctoral study in Physics at the university of Lübeck, where she focuses on developing short-wavelength swept sources for ophthalmic optical coherence tomography.

### Prof. Dr. Gereon Hüttmann

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**Gereon Hüttmann** received his diploma in physics and his Ph.D in physical chemistry from the University of Göttingen and the Max Planck Institute for Biophysical Chemistry. From 1992 to 2005, he was a research member and scientific group leader of the Medical Laser Center in Lübeck (MLL) and worked in the fields of photodynamic therapy and fluorescence detection of tumors. Since 2005, he has led his own research group at the Institute of Biomedical Optics at the University of Lübeck. Gereon Hüttmann was a member of the supervisory board of Thorlabs Lübeck GmbH and mentor of the spin-offs Optomedical Technologies GmbH and Visotec GmbH. He is currently a member of the German Center for Lung Research, Cluster of Excellence Precision Medicine in Chronic Inflammation (PMI) and deputy director of the Institute of Biomedical Optics in Lübeck. His research focuses on optical coherence tomography (OCT) and intravital microscopy.



### Assoc. Prof. Dr. Peng Li

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**Peng Li** is Associate Professor of Optical Engineering at Zhejiang University. He earned his B.E. degree in Optoelectronic Information Engineering and Ph.D. in Optical Engineering from Nanjing University of Science and Technology in 2005 and 2010, respectively. From 2010 to 2013, he conducted post-doctoral studies in the Department of Bioengineering at the University of Washington, Seattle, US. Later, in 2013, he joined Zhejiang University. His current research interests include the development of non-invasive, high-resolution, high-speed optical biomedical imaging technologies such as Optical Coherence Tomography (OCT), OCT Angiography (OCTA), Functional OCTA, and their applications in neurology, ophthalmology, dermatology, and oncology fields. Dr. Li has authored over 50 peer-reviewed journal articles and holds a total of 30 invention patents. He is also an associate editor for the journal Biomedical Optics Express.

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**Noah Heldt** was born in Kiel Germany. He obtained his Bachelor of Science in Medical Engineering Sciences at the University of Luebeck in 2019 and Master of Science in 2021 at the same university with a focus on machine learning, biomedical and imaging. From 2021 he is a research assistant and a doctoral student at the Institute of Biomedical Optics, University of Luebeck. His research interests are dynamic OCT, airway imaging and artificial intelligence.



### Dr. Ralf Brinkmann

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**Ralf Brinkmann** is currently the CEO of the Medical Laser Center Lübeck GmbH (MLL) and group leader at the Institute of Biomedical Optics (BMO), University of Luebeck, Germany. He studied physics at the University of Hanover, Germany, specializing in quantum optics and lasers. After a five-year interim period in industry, he joined the MLL in 1993, a non-profit technology transfer company for optics, biophotonics and laser medicine, and received his PhD at the University of Lübeck. Since 2005, he has been working at BMO as a research associate and head of several research groups. Parallel, he has been Managing Director of MLL since 2011. His research focuses on therapeutic laser applications, mainly in ophthalmology, urology, ENT, neurosurgery and general surgery. In particular, he aims to improve clinical laser applications towards a safer and more efficient application using automatically dose-controlled theragnostic procedures. His research projects are financed by multiple national and international funding programs and various companies. He has been three times awarded the national innovation prize for the promotion of medical technology by the German Federal Ministry of Education and Research.

### Mr. Maximilian Neidhardt

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**Maximilian Neidhardt** graduated from the Technical University of Hamburg (TUHH) with a master's degree in medical technology. Since 2019 he has worked as a research assistant at the Institute of Medical Technology and Intelligent Systems at TUHH. His research focuses on elasticity imaging of soft tissue with ultrasound and optical coherence tomography, particularly on combining high temporal and multi-dimensional imaging with machine learning algorithms to achieve more robust and precise predictions of tissue characteristics.



### Dr. Awanish Pratap Singh

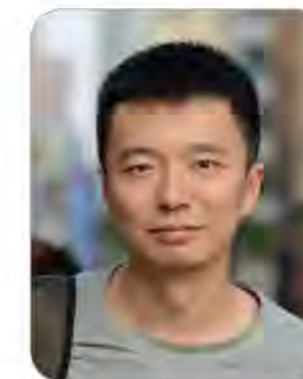
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**Awanish Pratap Singh** is a researcher with extensive expertise spanning fluid dynamics, laser-induced plasma ignition, and biomedical optics. Having earned both a bachelor's and master's degree in mechanical engineering, his thesis focused on exploring fluid dynamics related to the air intake of combustion engines. He later obtained a PhD in laser-induced plasma-based ignition and combustion from the esteemed Indian Institute of Technology Kharagpur. Following his PhD, he conducted post-doctoral research at the Indian Institute of Science Bangalore, delving into fluid dynamics and the disintegration of liquid droplets induced by vortices, shock, and lasers. He is currently serving as a postdoctoral researcher at the Institute of Biomedical Optics, University of Lübeck, where his work centers on the development of micro-optical components and probes to improve endoscopic OCT imaging. Beyond imaging, these components have various applications in science, engineering, and industrial quality assessment and inspection tasks. His diverse expertise allows him to make significant contributions to various scientific fields. Throughout his research career, he has published his work in prestigious academic journals.

### Prof. Dr. Ming Lei

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**Ming Lei** is Professor at Xian Jiaotong University. He received his BE degree from the School of Physics and Optoelectronic Engineering, Xidian University in 2000, and his PhD from Xian Institute of Optics and Precision Mechanics, Chinese Academy of Sciences in 2007. He pursued postdoctoral research in the Department of Chemistry, University of Konstanz, Germany from 2008 to 2010. His research is focused on super-resolution microscopy and optical trapping technologies.



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**Qiangzhou Rong** is Associate Professor of School of Life Science and Technology at Xi'an Jiaotong University. Dr. Rong earned his B.S. (2010) and Ph. D. (2015) degrees from Northwest University in Shaanxi, China. He completed his first postdoctoral training in 2017 at Padova University in Italy, and second postdoctoral training in 2020 at Duke University in US. Also, he completed his research scientist project in 2022 at Duke University and visiting researcher scientist project in 2023 at Washington University in St Louis in US. From 2019, Dr. Rong's research has focused on the development of photoacoustic imaging, light field microscopy, and ultrasound bioprinting technologies for life sciences and clinical translation. Dr. Rong received First Prize for Technological Invention in Shaanxi Province in 2020, Excellent Doctoral Dissertation in Shaanxi Province in 2017.

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**Lu Zhang** is Professor at the School of Instrument Science and Technology, State Key Laboratory for Manufacturing System Engineering, Xi'an Jiaotong University, China. In 2010, she received a Ph.D. in Instrument Science and Technology from Xi'an Jiaotong University. After that she did postdoctoral research in clinical medicine and biomedical engineering. She conducted research as a visiting scholar at the National University of Singapore and carried out short-term academic exchanges with several universities, such as Chung-Ang University of Korea, University of Adelaide, University of Zurich, University of Auckland, etc. At present, her research interests are biomedical optical imaging and micro-nano control, optical artificial intelligence detection, port food intelligent detection and instruments, and three-dimensional optical detection of space targets. She has published more than 40 peer-reviewed papers in the field of biomedical optics, and granted 5 invention patents. She is senior member of the International Society of Photo-Optical Instrumentation Engineers (SPIE) and the Optical Society of America (OSA). She won the "highly cited female scientist" in the field of optics in China in 2022.



## Biographies of supporting team for the Symposium

### Assoc. Prof. Dr. Sijia Wang

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**Sijia Wang** is Associate Professor at the Institute of Biomedical Photonics and Sensing, Xi'an Jiaotong University, China. He received Ph.D. in Biomedical Engineering from Xi'an Jiaotong University in 2016. He was a joint doctoral student at the Institute of Biomedical Optics, University of Luebeck supervised by Prof. Alfred Vogel and PD. Dr. Ramtin Rahmzadeh from 2013 to 2015. Currently, his research interests are optical theranostic and multifunctional nanomedicine. He has been awarded two National Natural Science Foundation of China funded research programs in the area and published more than 10 peer-reviewed papers on anti-tumor photomedicine in Nano-Micro Letters, ACS Materials & Interfaces, Nanotechnology, et. al. He is the member of the Chinese Society of Optical Engineering and the Chinese Society of Biomedical Engineering. He is the youth editorial board member of Chinese Journal of Lasers.

### Assoc. Prof. Dr. Jing Wang

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**Jing Wang** is Associate Professor at the Institute of Biomedical Photonics and Sensing, Xi'an Jiaotong University, China. He received Ph.D. in Biomedical Engineering from Xi'an Jiaotong University in 2010. He was a visiting scientist at the Institute of Biomedical Optics, University of Luebeck in 2006 and 2007 with collaboration with Prof. Dr. Gereon Hüttmann. Currently, his research interests are hyper-spectral and endoscopic optical imaging for disease diagnosis. He has been awarded twice the National Natural Science Foundation of China (NSFC) funded research programs in the area and published more than 10 peer-reviewed papers in Optical Express, Journal of Biomedical Optics, et. al. He is the member of the Chinese society of Optical Engineering and the Chinese society of Biomedical Engineering.



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### Assoc. Prof. Dr. Lei Fu

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**Lei Fu** is assistant professor at the Institute of Biomedical Photonics and Sensing, Xi'an Jiaotong University, China. He was working as a visiting scientist and post-doctor in Prof. Vogel's group at the Institute of Biomedical Optics, University of Luebeck, which is sponsored jointly by DAAD and CSC. He received Ph.D. in Biomedical Engineering from Xi'an Jiaotong University in 2020. His research interests are laser-induced cavitation in liquid and its applications in the biomedical field. He has been awarded one National Natural Science Foundation of China funded research program and published several peer-reviewed papers in high ranking journals such as Optical Express, Journal of Biomedical Optics.

### Dr. Xiaofan Du

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**Xiaofan Du** is assistant professor at Institute of Biomedical Photonics and Sensing, Xi'an Jiaotong University, China. His research interests are laser-induced optoporation technique, biomedical optical instrument development, NIR-II fluorescence endoscopic imaging. He has been awarded one National Natural Science Foundation of China funded research program and published several peer-reviewed papers in high ranking journals such as Journal of Biomedical Optics, Drug Delivery.

## CONFERENCE VENUE AND LOCATION OF HOTEL

### 会议地点和酒店位置

➔ **CONFERENCE VENUE 会议地点:**  
Nanyang Hotel (Xi'an Jiaotong University Academic Exchange Center)

➔ **LOCATION 位置:**  
No.1 South Xingqing Road, Xi'an, Shaanxi Province, China

➔ **WEBSITE 网站:**  
<https://www.jdnyhotel.com/en/>

➔ **TEL. 电话:**  
+86-029-87665566



### Hotel location is labeled by on the following map 地图上标注的酒店位置

➔ **CLOSEST METRO STATIONS 最近的地铁站:** Yanxianglu Beikou (Line 5) or Yanxingmen (Line 3)

➔ **METRO APP 地铁应用小程序:** "Xi'an Metro Map" on the apple store

