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Special Issue on Photonic Integration and Optoelectronics Convergence

Release Date: 25 July 2022

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Submission deadline: 31 January 2023

Integrated photonics consists of integrating multiple photonic devices/functions on a single Photonic Integrated Chip (PIC), while optoelectronics convergence is building the bridge between photonics and microelectronics. Empowered by various nanofabrication techniques on diverse innovative material platforms, remarkable advances have been made in photonic integration and optoelectronics convergence in the last decade. Those exciting progresses took place in the areas of materials, processing techniques, innovations on both passive and active devices, chip architectures, levels of integration complexity and density, and beyond. Integration offers size and cost reduction, faster processing speed, larger information capacity, higher energy efficiency, more versatility, and consequently broader impact to the human society. Various miniaturized devices are made available enabling better existing applications, new emerging applications, and opening new market opportunities in communications, biomedicine, sensing, computing, automotive and metrology, etc.

This special issue aims at capturing the most exciting advances in the leading edge of photonic integration and optoelectronics convergence, including new material platforms, new fabrication and characterization technologies, new device physics and architectures, new design principle for miniaturized components, micro- and nano-photonics devices, the rising and potential applications. We hope to provide an overview as well as insightful perspectives of the field by collecting contributions from leading experts and major industry players to promote the breakthrough science and impactful applications in photonic integration and optoelectronics convergence.

This issue is co-edited by

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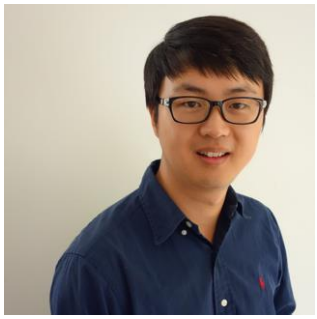
Guest editors:

Lianshan Yan is currently the Dean of the School of Information Science & Technology (SIST) and the Director of Center for Information Photonics & Communications (CIPC) at Southwest Jiaotong University, China. Prof. Yan is the author and co-author of more than 500 papers, four books and two book chapters. He holds thirteen U.S. patents and more than seventy Chinese patents. Prof. Yan is a Fellow of Optica (former OSA). He is the co-Editor-in-Chief of Light: Advanced Manufacturing (2020-). He received the IEEE Photonics Society Distinguished Lecturer Award (2011-2013) and IEEE LEOS Graduate Fellowship (2002). He was the co-chair or TPC member of more than fifty international conferences. He is also the winner of the National Science Fund for Distinguished Young Scholars of China, Chair Professor of CheungKong Scholars Program. He was the Chair of Optical Fiber Technology Technical Group of OSA (2015-2018) and an associate editor of IEEE Photonics Journal (2009-2015).

Baohua Jia is a professor and Australian Research Council Future Fellow in School of Science at RMIT University. Before joining RMIT Baohua was the Founding Director of Centre for Translational Atomaterials at Swinburne University of Technology. Her research focuses on the fundamental light and nano-and atomaterial interactions. In particular her work on laser manipulation of two-dimensional materials has led to the design and fabrication of functional nanostructures and nanomaterials for effective harnessing and storage of clean energy from sunlight, purifying water and air for clean environment and imaging, spectroscopy and nanofabrication using ultrafast laser towards fast-speed all-optical communications and intelligent manufacturing. Prof. Jia has co-authored more than 260 scientific publications in highly ranked journals and prestigious international conferences. She has delivered more than 60 keynote/invited talks at international conferences and serves multiples professional committees. She has received numerous prizes and awards, including the ARC Future Fellow, DECRA and APD, Finalist for the Prime Minister's Science Awards, Young Tall Poppy Science Award, and L'Oréal Australia and New Zealand for Women in Science Fellowship et al.



Di Liang is currently a director in Alibaba Cloud, Alibaba Group. Prior that, he was a Distinguished Technologist at Hewlett Packard Labs, Hewlett Packard Enterprise where he led the advanced R&D of silicon and compound semiconductor integrated photonics for high-performance computing and emerging applications. During 2007-2009, he was a core member in the early-stage joint development of III-V-on-silicon heterogeneous photonic integration between the University of California - Santa Barbara and Intel. His research interests include III-V and silicon photonic devices and integrated circuits, heterogeneous and monolithic material integration, and nanofabrication technology. He has authored and coauthored over 250 journal and conference papers, 1 edited book, 7 book chapters, and was granted by 49 patents with another 55+ pending. He is a Fellow of Optica (former OSA), a senior member of IEEE, and associated editor of Optica: Photonics Research and IEEE: Journal of Quantum Electronics.

Prof. **David Moss** has a career in research in academia, industry and government research laboratories in Canada, Japan and Australia. He was with the University of Sydney for over 15 years, the last 10 of which were with the ARC Centre of Excellence CUDOS. David still holds an honorary Professorial Fellow position with the University of Sydney. Professor Moss has over 700 publications including numerous articles in Nature family journals and conference papers with around 12000 citations and an h-index of 64. He is leading extensive international research networks in nanophotonics and other areas. David has been highly successful at winning ARC competitive research grants and has won a number of notable awards for his research including the 2011 Australian Museum Award and the Google Eureka Science Prize for Innovation. David is a Fellow of the Optica (former OSA) and the IEEE.

Xi Xiao is the CEO of National Information Optoelectronics Innovation Center (NOEIC) of China, and the vice director of State Key Laboratory of Optical Communication Technologies and Networks (OCTN) at China Information and Communication Technologies Group Corporation (CICT). He was an associate professor of the institute of Semiconductors, Chinese Academy of Sciences till 2013. His present research interests include the

Terabps-scale silicon-based photonic devices for telecommunications, datacom and interconnect applications, as well as their enabling fabrication and integration technologies. He has published over 120 peer-reviewed journal and conference papers, including *Nature Communications, Advanced Materials, ACS Photonics, Photonics Research, IEEE JSSC, ECOC post-deadline paper*、*ECOC invited talk* and *OFC invited talk*. He was a subcommittee member of CLEO, ACP, OECC, POEM, and currently working as a subcommittee member of OFC 2023 and the editor of *Light: Advanced Manufacturing*.