

# Guest Editorial

## JQE Special Virtual Issue Dedicated to the 22nd European Conference on Integrated Optics (ECIO)

**T**HIS Special Issue is associated with the European Conference on Integrated Optics (ECIO). The ECIO 2020 conference was held on June 23–24, 2020, and was initially scheduled in Paris, France. Due to the health and safety concerns related to the Covid-19 pandemic, the conference organizing committee has decided to adopt a digital conference format. The particularity of ECIO 2020 was to only have live talks in order to favor at maximum the interactions between speakers and attendees. This conference, organized by the Center for Nanoscience and Nanotechnology, Paris-Saclay University—CNRS, was the 22nd in a series that started in London in 1981. It attracted 640 participants from all over the world, with 103 oral presentations, including 2 plenary talks, 5 keynotes, 14 invited, 45 regular, and 57 poster speakers. The conference covered a diverse range of subjects in integrated optics and optoelectronics.

The ECIO presenters of the conference were offered the opportunity to submit papers for this Special Issue. The changes in our daily research organization due to the pandemic have reduced the number of submitted papers this year compared to the previous events. Still, this Special Issue contains some very interesting papers covering important research activities, including a new approach for the development of compact integrated spectrometers, an efficient hybrid III-V on Si optical modulator, and polarization converters and a fast reconfigurable microwave photonics phase shifters.

The Guest Editors are thankful to the Editor-in-Chief Prof. Hon Ki Tsang, for providing the opportunity to dedicate this Special Issue to ECIO2020, to all authors and reviewers, and to the IEEE Photonics Society staff, especially Yvette Charles, Publications Coordinator, for supporting and managing the entire workflow.

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**Laurent Vivien** received the Ph.D. degree in 2001 for his work on nonlinear optical properties of carbon nanotubes for optical limiting applications. He is currently a CNRS Director of research with the Center for Nanoscience and Nanotechnology (C2N), a Joint Laboratory of the CNRS and the University of Paris Saclay, France. His research interests include the development of fundamental concepts for silicon photonics, including optoelectronic and hybrid photonic devices. He has contributed to the demonstration of high-speed waveguide integrated germanium photodetectors and carrier depletion based silicon modulators. He has also been at the forefront of the development of hybrid integration of carbon nanotubes on Si photonics platform and recently on high-speed Pockels effect in strained silicon waveguides. From 2006 to 2016, he was in charge of the Silicon Photonics Group with C2N. Since 2016, he has been serving as the Deputy Director and the Director for the Photonics Department, C2N. He has supervised the research of more than 20 Ph.D. students and ten postdoctoral fellows. He received the Consolidator European Research Council (ERC) Grant on the development of a strained silicon photonics platform for optical communications. He is also an Elected Fellow of the Optical Society of America (OSA), the European Optical Society (EOS), and the International Society for Optics and Photonics (SPIE). He regularly serves as the Chair or a Program Committee Member for OSA, IEEE, EOS, and SPIE conferences on photonics and optoelectronics.



**Delphine Marris-Morini** is currently a Professor with Paris-Saclay University. Her research interests at the Center for Nanoscience and Nanotechnology include silicon photonics in the near-IR and mid-IR wavelength range. She received an ERC Starting Grant (INsPIRE) on Ge-rich photonic integrated chips toward the mid-IR wavelength range for sensing and spectroscopic application. She received the Bronze Medal from CNRS in 2013. She has published over 100 journal articles.



**Carlos Alonso Ramos** received the Ph.D. degree from the Universidad de Málaga, Spain, in June 2014, on the development of high-performance integrated photonic circuits for chip interconnects and next-generation coherent transceivers. Since 2020, he has been in charge of the Silicon Photonics team with the Center for Nanoscience and Nanotechnology (C2N), France. He is currently a CNRS Researcher with C2N. He is the coauthor of more than 90 journal articles, the lead inventor of two patents, and has contributed to more than 200 conference presentations. His research interests include passive, nonlinear, and optomechanical devices for silicon photonics.



**Eric Cassan** has been a Full Professor with the University of Paris-Saclay since 2009 and involved in silicon photonics for years. He has worked on the themes of optical interconnects, photonic crystals (slow waves and dispersive effects), and nonlinear integrated optics, and his activity has focused a lot in recent years on hybrid photonics on silicon (CNTs, Erbium-doped polymers, and chalcogenides) for nonlinear optics on a chip. He has supervised the research of around 20 Ph.D. candidates. He has also been involved for about ten years in his university local institutions, especially regarding doctoral studies and international relationships.



**Pavel Cheben** is currently a Principal Research Officer with the National Research Council (NRC) of Canada. He is also an Official Member of the Center for Research in Photonics, University of Ottawa, an Honorary Professor with the University of Malaga, a Guest Professor with the University of Zilina, and an Adjunct Professor with the University of Toronto, Carleton University, University of Ottawa, and McMaster University. He is best known for his work on subwavelength metamaterial waveguides. He introduced a new area of science that brings together metamaterial research and integrated photonics. He has coauthored more than 550 articles and book chapters, 34 patent applications, and over 250 invited presentations. For his pioneering research in photonics, he was elected as a Fellow of the Royal Society of Canada, the American Physical Society, the Optical Society of America, the European Optical Society, the Institute of Physics, the International Society for Optics and Photonics (SPIE), the Engineering Institute of Canada, and the Canadian Academy of Engineering. He was a recipient of the Order of the Slovak Republic, the Canada Public Service Excellence Award, the International Prize of the Slovak Academy of Sciences, the NRC Industrial Achievement Award, and the NRC Excellence in Research Award. He has been the most published scientist of NRC Canada for the past 12 years.



**Andrea Melloni** (Member, IEEE) is currently a Full Professor with the Politecnico di Milano, Italy, in electromagnetic fields, a Leader of the Photonic Devices group. His research interests include the analysis, design, characterization, and exploitation of integrated optical devices for optical communication and sensing. He has been one of the pioneers of the slow light concept; contributed to define the new schemes of generic photonic foundries in Europe. He is also focusing on the control and stabilization of photonic integrated circuits. He is the co-inventor of the first noninvasive on-chip light-monitor. In 2008, he founded the company Filarete, for the development of Aspic, the first circuit simulator for integrated optical circuits. He has been one of the proponents, and also the Deputy Director, of Polifab, the facility for micro- and nanotechnologies with the Politecnico di Milano. He is also a Fellow of OSA.



**Fabrice Raineri** has been an Associate Professor with the Université de Paris, France, since 2005. While teaching in the Physics Department of the university, he conducts his research activity at the Center de Nanosciences et de Nanotechnologies (CNRS, UPSaclay). His current research interests include the investigation of optical nonlinear interactions within semiconductor micro/nanostructures and their exploitation for the achievement of optical functionalities useful for data processing. Recently, he led his work toward integrated nanophotonics with a specific effort on hybrid III-V semiconductors on Silicon structures. In 2017, he was awarded with an ERC Consolidator Grant. He has published more than 70 articles.