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Boon S. Ooi

Principal Investigator

Professor, Electrical Engineering, KAUST

Fellow of The Optical Society (OSA) | Fellow of the International Society for Optics and Photonics (SPIE) | Fellow of the Institute of Physics (London) | Senior Member of IEEE

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Introduction

Boon S. Ooi is a Professor of Electrical Engineering at KAUST. He is also the Director of KACST - Technology Innovation Center (TIC) for Solid-State Lighting. Professor Ooi received the B.Eng. and Ph.D. degrees in electronics and electrical engineering from the University of Glasgow (Scotland, U.K) in 1992 and 1994, respectively. He joined KAUST from Lehigh University (Pennsylvania, USA) where he held an Associate Professor position and headed the Photonics and Semiconductor Nanostructure Laboratory. In the U.S., his research was primarily funded by the National Science Foundation (NSF) and Department of Defense and the Army Research Office. In KSA, major funding support for his research is from King Abdulaziz City for Science & Technology (KACST), Saudi Aramco, SABIC and Qatar National Research Fund (QNRF).

His research is primarily concerned with the study of semiconductor lasers and photonic integrated circuits. Specifically, he has contributed significantly to the development of practical technologies for semiconductor photonics integrated circuits and the development of novel broadband semiconductor lasers, multiple-wavelength lasers, and superluminescent diodes. Most recently, he focuses his research on the areas of GaN-based nanostructures and lasers for applications such as solid-state lighting and visible light communications.

He has given many lectures, seminars and invited talks at universities, research institutions, and international conferences. He has been the organizing chair for several IEEE, OSA and MRS conferences, and served on the technical program committee of CLEO, IPC, and IEDM. He was an associate editor of IEEE Photonics Journal from 2009-2015. Presently, he serves as an associate editor of OSA Optics Express (since January 2017), IEEE Photonics Journal (since November 2017), and SPIE Journal of Nanophotonics (since January 2015).

In KSA, he has founded the IEEE Photonics Society Western Saudi Arabia Chapter and been serving as the Chapter Chair since 2010. He has also been serving in the executive board member of IEEE Western Saudi Arabia Section since 2010.

He was appointed by Saudi's Government as a member of delegate to present in COP18/CMP8 (The 18th Conference of Parties, and the 8th session the Meeting of the Parties to the Kyoto Protocol), United Nation Global Climate Change Conference (UN-GCC) in Doha in November 2012, and COP22 (The 18th Conference of Parties) in Marrakech in December 2016.

Dr. Ooi is a Fellow of the Optical Society of America (OSA), a Fellow of the International Society for Optics and Photonics (SPIE), a Fellow of the Institute of Physics (London), and a Senior Member of IEEE.

KAUST Affiliations

Computer, Electrical, and Mathematical Sciences and Engineering | Electrical Engineering

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Faculty

Boon S. Ooi

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- Ph.D., Electronics & Electrical Engineering, University of Glasgow, UK, 1994
- B.Eng, Electronics & Electrical Engineering, University of Glasgow, UK, 1992

Research Interests

Professor Ooi's research is primarily concerned with the study of semiconductor lasers and photonic integrated circuits. Specifically, he has contributed significantly to the development of practical technologies for semiconductor photonics integrated circuits, and the development of novel broadband semiconductor lasers, multiple-wavelength lasers and superluminescent diodes. Most recently, he focuses his research on the areas of GaN-based nanostructures and lasers for applications such as solid-state lighting and visible light communications.

Professional Profile

Professor Boon S. Ooi is a Professor of Electrical Engineering at KAUST. He is also the Director of KACST - Technology Innovation Center (TIC) for Solid-State Lighting. Prof. Ooi received the B.Eng and Ph.D degrees in electronics and electrical engineering from the University of Glasgow (Scotland, U.K.) in 1992 and 1994, respectively. He joined KAUST from Lehigh University (Pennsylvania, USA) where he held an Associate Professor position and headed the Photonics and Semiconductor Nanostructure Laboratory. In the US, his research was primarily funded by the National Science Foundation (NSF), and Department of Defense and the Army Research Office. In KSA, major funding support for his research is from King Abdulaziz City for Science & Technology (KACST).

Prof. Ooi has given many lectures, seminars and invited talks at universities, research institutions and international conferences. He has been the organizing chair and technical member for several IEEE, OSA and MRS conferences. He is an associate editor of IEEE Photonics Journal. In KSA, he founded the IEEE Photonics Society Western Saudi Arabia Chapter and has been serving as the Chapter Chair since 2010. Prof. Ooi is a Fellow of the International Society for Optics and Photonics (SPIE) and a Fellow of the Institute of Physics (UK).

Selected Publications

- "Enabling Area-Selective Potential-Energy Engineering In InGaN/GaN Quantum Wells By Post-Growth Intermixing"
C. Shen, T. K. Ng, B. S. Ooi
 Optics Express, 23(6), 7991-7998, 2015
- "The Recombination Mechanisms Leading To Amplified Spontaneous Emission At The True-Green Wavelength In CH₃NH₃PbBr₃ Perovskites"
 D. Prianti, I. Dursun, M.S. Alias, D. Shi, V.A. Melnikov, T.K. Ng, O.F. Mohammed, O.M. Bakr, B.S. Ooi
 Applied Physics Letters, 106, 081902, 2015
- "Exfoliation Of Threading Dislocation Free Single Crystalline Ultrathin Gallium Nitride Nanomembrane"
R. T. ElAfy, M. A. Majid, T. K. Ng, L. Zhao, D. Cha, B. S. Ooi
 Advanced Functional Materials, Vol. 24(16), pp2305-2311, 2014
- "Self-Assembled InAs/InP Quantum Dots And Quantum Dashes: Material Structures And Devices"
M. Z. M. Khan, T. K. Ng, B. S. Ooi
 Progress in Quantum Electronics, Vol. 38(6), pp237-313, 2014
- "A Monolithic Electrically Injected Nanowire Laser On (001) Silicon"
T. Frost, S. Jahangir, E. Stark, S. Deshpande, A. Hazari, C. Zhao, B. S. Ooi, P. Bhattacharya
 Nano Letters, Vol.14 (8), pp4535-4541, 2014
- "Simultaneous Quantum Dash-Well Emission In A Chirped Dash-In-Well Superluminescent Diode With Spectral Bandwidth >700nm"
M. Z. M. Khan, M. A. Majid, T. K. Ng, D. Cha, B. S. Ooi
 Optics Letters, vol. 38 (19), pp. 3720-3723, 2013
- "Quantum Dashes On InP Substrate For Broadband Emitter Applications"
B. S. Ooi, H. S. Djie, Y. Wang, C. L. Tan, J. C.M. Hwang, X. M. Fang, J. M. Fastenau, A. W.K. Liu, G. T. Dang, W. H. Chang
 IEEE Journal of Selected Topics in Quantum Electronics, Vol. 14(4), pp 1230-1238, July/August 2008

Patents

- "Laser based horticulture device", US Provisional Patent, September 2014
- "Color detection and correction for solid-state lighting", US Provisional Patent, April 2014
- "Defect free single crystal thin layer", USA Patent application, March 2013
- "Optical broadband emitters and the method of making the same," USA Patent 7,485,89
- "Quantum well intermixing", US Patent 6,617,188
- "Method for shifting the bandgap energy of a quantum well layer," US Patent 6,878,562

Awards

- Fellow of the SPIE, 2009
- Fellow of the Institute of Physics (UK), 2007

Affiliations

- Computer, Electrical and Mathematical Sciences and Engineering Division (CEMSE) at KAUST
- Electrical Engineering Department (EE) at KAUST
- Institute for Electrical and Electronics Engineers (IEEE)
- SPIE-The International Society for Optical Engineering
- Institute of Physics (UK)

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