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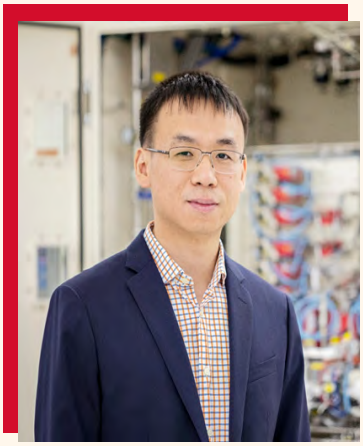
Semiconductor UV lasers and LEDs



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ABSTRACT:

III-nitride semiconductor visible lasers and LEDs have demonstrated enormous success in solid state lighting and display, which has been recognized by the Nobel Prize in Physics. They are ubiquitous with wall-plug efficiency close to 90%. However, III-nitride semiconductor UV lasers and LEDs still suffer much lower efficiency due to multi-faceted challenges, hindering them from being deployed in critical areas including water purification, curing, and communication. This seminar elaborates the research progress made by Advanced Semiconductor Laboratory at KAUST to improve the performance of the UV lasers and LEDs, including epitaxy, physics, and devices. Some of the significant achievements include the first hyperuniform laser, the pioneering B-III-N research, the polarization toolbox, the first deep UV lasing from GaN quantum wells, and the first III-nitride design software based on machine learning.

BIOGRAPHY:

Xiaohang Li is a faculty at KAUST. Prior to joining KAUST, he received M.S. and Ph.D. degrees from Lehigh University and Georgia Institute of Technology, respectively. He is the recipient of the Harold M. Manasevit Young Investigator Award from the American Association for Crystal Growth, the SPIE D. J. Lovell Scholarship, the Edison Prize from the Edison Innovation Foundation, the IEEE Photonics Graduate Student Fellowship, and the 40 under 40 Award from Georgia Institute of Technology. He is also an Associate Editor of the OSA Photonics Research.