Kar Wei NG, Ph.D.

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SUMMARY

Dr. Ng is currently an associate professor at the Institute of Applied Physics and Materials Engineering in University of Macau. His research mainly focuses on the monolithic integration of III-V based semiconductors with silicon technologies, as well as the exploration of emerging low-cost materials (e.g. metal halide perovskites) for optoelectronic applications, with a special emphasis on quantum dot light emitting diodes (QLEDs) and photodetectors. Dr. Ng has acquired rich experiences in the studies of nano-scale materials with various characterization techniques including high resolution transmission electron microscopy, Raman spectroscopy, X-ray photoelectron spectroscopy, etc., which are crucial to the execution of the current project. Some highlights of his research achievements include

1. Published more than **110 SCI papers** in top international journals including Nature Photonics, Nano Letters, ACS Nano, etc.
2. Filed two patents during his service at the University of Macau
3. Secured 9 research grants as the sole principle investigator with a total of over **MOP 8 million** (~ USD 1 M)
4. Received over **5300 citations** and an **h-index of 39** on Google Scholar

In addition, Dr. Ng has been serving as the **leader for the Macau team in the Asia and International Physics Olympiads** since 2022.

EDUCATION

University of California, Berkeley

- *Doctor of Philosophy* in Engineering with a Designated Emphasis in Nanoscale Science and Engineering
  Sep 08 – Dec 13

Hong Kong University of Science and Technology (HKUST)

- *Master of Philosophy* in Electrical and Electronic Engineering
  Sep 04 – May 07
- *Bachelor of Engineering* in Electronic Engineering
  Sep 01 – Jun 04 ***First Class Honors***

PROFESSIONAL EXPERIENCE

Jan 16 – **University of Macau**

Assistant Professor (Jan 2016 – Aug 2022), Associate Professor (Aug 2022 onward)
Institute of Applied Physics and Materials Engineering

Research

- Monolithic integration of III-V semiconductor micropillars with silicon, achieving the first nanolaser and optical data link directly grown and fabricated on silicon
- Development of novel metal-halide perovskite microwires for photodetector and laser applications
- Pioneering the recycling of lead-based perovskite for sustainable development of perovskite photovoltaics
- 5 funded projects supporting 6 PhD students

Teaching

- Developed five new courses in physics and materials characterizations
- Average score in student feedback evaluation = 4.53/5.0 (department average = 4.1)

Services

- Awardee of IAPME Excellence in Service in 2017/2018
- Person-in-charge in the lab remodeling task force, overseeing the overall design and construction of lab spaces for chemical wet labs, cleanroom and characterization facilities
- **Leader of the Macau team for Asia and International Physics Olympiad**

Dec 14 – Dec 15 **Taiwan Semiconductor Manufacturing Company**
Principal Engineer
- Epitaxial growth and optical metrology developments

Mar 14 – May 14 **Hong Kong University of Science and Technology**
Visiting Scholar
- Investigate the growth of InP on patterned silicon substrate
- Explore various techniques for fabricating nano-patterned substrates

Jun 12 – Aug 12 **Sumitomo Electric**
Summer Intern
- Failure analysis of InP-based epitaxy utilizing high-resolution transmission electron microscopy (HRTEM), z-contrast imaging, energy dispersive X-Ray spectroscopy, etc.

Sep 08 – Jan 14 **University of California, Berkeley**
Graduate student Researcher
- MOCVD growth of GaAs- and InP-based nanolasers on various substrates, including crystalline and polycrystalline silicon, for the monolithic integration of optoelectronics and Si-based technologies
- Material characterization with HRTEM and scanning transmission electron microscopy (STEM) analysis, utilizing focus ion beam (FIB) for site specific lamella preparation and micromanipulation

Jun 07 – Jul 08 **Hong Kong University of Science and Technology**
Research Assistant
- Investigation of GaN based Green light emitting diode (LED) degradation over time
- Growth optimization and characterization of GaN grown on silicon substrate

Sep 04 – Jul 07 **Hong Kong University of Science and Technology**
Postgraduate student
- Development of GaN based LED on patterned sapphire and silicon substrates

RESEARCH PROJECTS

1. Advanced Materials Characterizations of III-V based Optoelectronic devices on Dissimilar Substrates (SRG2016-00073-FST, University of Macau), ***Principle Investigator***, 2016-2018, MOP 150,000
2. Exploring the Extraordinary Mechanical and Piezoelectric Properties of Unconventional Bulk InGaAs and InP in Wurtzite Crystal Phase (MYRG2017-00152-FST, University of Macau), *Principle Investigator*, 2018-2020, ***Principle Investigator***, MOP 1,238,550
3. Substrate Patterning for High-quality Monolithic Integration of III-V Compound Semiconductor with Silicon (051/2017/A, The Science and Technology Development Fund, Macao), 2018-2019, ***Principle Investigator***, MOP 383,000
4. Monolithic Integration of Optoelectronics with Silicon-based Technology via Direct Growth of III-V Microstructures on Silicon (MYRG2018-00086-IAPME, University of Macau), 2019-2021, ***Principle Investigator***, MOP 675,000
5. Lead recycling for sustainable commercialization of perovskite based solar cells (0038/2019/A1, The Science and Technology Development Fund, Macao), 2020-2022, ***Principle Investigator***, MOP 2,250,000
6. Controlled Preparation and Photo-stimulated Luminescence Investigations on Electron-trapped Transparent Glass Ceramics (Wuyi University, Hong Kong and Macao Joint Research & Development Fund), 2021-2023, ***Co-principle Investigator***, MOP 148,000

7. Exploration of High Mobility Metal Oxide for Thin Film Transistors in Flexible Display (0052-2021-AGJ, The Science and Technology Development Fund, Macao), 2022-2024, ***Principle Investigator***, MOP 1,130,000
8. High Performance Electrochromic glass for AR/VR applications (MYRG2022-00063-IAPME), 2023-2024, ***Principle Investigator***, MOP 326,970
9. High Efficiency Long Lifetime Blue Quantum Dot Light Emitting Diode (0027/2023/AMJ), 2023-2027, ***Principle Investigator***, MOP 2,010,000

Total fund granted: Over **Macau Pataca MOP 8,300,000 (USD 1.03 M)**

AWARDS AND SCHOLARSHIPS

2018	IAPME Academic Awards 2017/2018 – Excellence in Service, University of Macau
2013	UC Berkeley Outstanding Graduate Student Instructor Award
2012	Best Poster Award (Honorable Mention), International Nano-Optoelectronic Workshop (iNOW), Berkeley & Palo Alto, 2012
2010	Best Poster Award (3rd place), International Nano-Optoelectronic Workshop (iNOW), Beijing & ChangChun, 2010
2005	Sumida and Ichiro Yawata Foundation Scholarship
2005	Silver Award for volunteer Service
2004	Hong Kong University of Science and Technology Academic Achievement Award • **Top 16 graduating students in the university in the academic year**
2001-2004	The Hong Kong Jockey Club Scholarships • **Triple receptions**
2002-2004	The Hongkong Electric Co Ltd Scholarships • **Triple receptions**

SELECTED PUBLICATIONS

Journal

1. H. Liu, P. L. Gao, Y. M. Song, M. W. Wang, T. Ding, J. Jiang, R. F. Zheng, S. Chen, **K. W. Ng***, S. P. Wang* "Chlorine-Modified Low-Temperature Crystallized TiO2 Electron Transport Layer for Stable QLEDs" *ACS Appl. Electron. Mater.* 7, 24, 11142–11148 (2025) (* co-corresponding authors)
2. Y. Yan, C. Bian, R. Wang, Z. Yan, M. Li, P. Lei, S. Liu, Y. Lv, P. Li, X. He, **K. W. Ng**, J. Wang, S. Wang, G. Cai "In-Situ trace polymer intercalation endowing vanadium pentoxides with unique structural regulation for robust electrochromism" *Chemical Engineering Journal* 527, 171578 (2025)
3. T. Ding, Z. S. Wu, J. Jiang, M. W. Wang, Y. M. Song, H. Liu, J. L. Li, S. Chen, P. L. Gao, X. N. Liu, H. C. Liu, **K. W. Ng***, S. P. Wang* "Electrochemically engineered NiOx for high-performance quantum dot light-emitting diodes" *Journal of Colloid and Interface Science* 703 (1), 139079 (2026) (* co-corresponding authors)
4. M. W. Wang, T. Ding, Y. M. Song, H. Liu, J. Jiang, P. L. Gao, **K. W. Ng***, S. P. Wang* "Mg-Incorporated Nickel Oxide Hole Injection Layer for Stable and Efficient Quantum Dot Light-Emitting Diodes" *J. Phys. Chem. Lett.* 16, 36, 9242–9248 (2025) (* co-corresponding authors)
5. Y. M. Song, M. W. Wang, H. Liu, T. Ding, J. Jiang, P. L. Gao, **K. W. Ng***, S. P. Wang* "Dipole Decoration of ZnO Nanoparticle-Based Electron Transport Layer for Efficient Electron Injection

in Quantum Dot Light-Emitting Diodes" *ACS Appl. Nano Mater.* 8, 34, 16955–16962 (2025) (* co-corresponding authors)

6. J. Jiang, T. Ding, H. Bao, Y. M. Song, M. W. Wang, H. Liu, Z. S. Wu, Z. D. Lian, H. Z. Zhong, H. C. Liu, S. M. Ren, Y. Li, P. L. Gao, **K. W. Ng*,** S. P. Wang* "Improved Hole Injection by Enhancing Electron Extraction of Solution-Processed MoOx in Quantum Dot Light-Emitting Diodes" *ACS Appl. Mater. Interfaces* 17, 25, 37185–37192 (2025) (* co-corresponding authors)
7. P. K. Wong, S. H. Chen, M. A. Ghadikolaei, **K. W. Ng**, S. M. Y. Lee, J. C. Xu, Z. D. Lian, L. Li, S. Li, Z. Ning, N. K. Gali, A. A. Fadairo "Chemical and cell toxicity properties of particulate matter emitted from a diesel engine fueled with biodiesel and ethanol blends" *Environmental Pollution* 379, 126484 (2025)
8. P. K. Wong, M. A. Ghadikolaei, A. A. Fadairo, **K. W. Ng**, J. C. Xu, Z. D. Lian, Z. Ning, N. K. Gali "Does distance from the vehicle headlight change the properties of particulate matter?" *Journal of Hazardous Materials* 491, 137999 (2025)
9. P. Xiao, J. Lin, Y. Zhou, H. Tan, H. Zhang, Z. Liu, S. Liu, R. Wu, G. Nie, **K. W. Ng**, J. Chen, Y. Zhang, B. Liu "A flexible phototransistor with simultaneous high mobility and detectivity" *Applied Physics Reviews* 12, 011415 (2025)
10. P. Gao, C. Li, H. Zhou, S. He, Z. Yin*, **K. W. Ng***, S. Wang* "Eco-friendly quantum-dot light-emitting diode display technologies: prospects and challenges" *Opto-Electronic Science*, 240028-1-240028-23 (2025) (* co-corresponding authors)
11. P. L. Gao, J. Jiang, Y. M. Song, M. W. Wang, T. Ding, H. Liu, Z. Yin*, **K. W. Ng***, S. Chen*, S. P. Wang* "Efficient Hole Injection From Indium Tin Oxide in Quantum-Dot Light-Emitting Diodes" *Advanced Functional Materials*, 2503467 (2025) (* co-corresponding authors)
12. H. Gao, D. Luo, Y. Ren, W. Fang, Y. Zhou, J. Liao, J. Yu, S. Liao, **K. W. Ng**, S. P. Wang, B. Liu "The Rise of Colloidal Quantum Well Light-Emitting Diodes" *Advanced Functional Materials*, 2422377 (2025)
13. A. A. Fadairo, P. K. Wong, W. F. Ip, M. A. Ghadikolaei, Z. Cai, **K. W. Ng**, Z. D. Lian "Impact of neem oil biodiesel blends on physical and chemical properties of particulate matter emitted from diesel engines" *Environmental Pollution* 362, 124972 (2024)
14. H. Lin, J. Y. Dong, Q. Wei, G. Wang, J. L. Li, Z. D. Lian, P. L. Gao, S. Chen, G. C. Xing, **K. W. Ng***, S. C. Su*, S. P. Wang* "Chelating Ligand Surface Functionalization for Ultrastable Efficient Blue Emissive Nanoplatelets" *ACS Materials Letters* 7 (1), 59-67 (2024) (* co-corresponding authors)
15. L. Qiao, A. Zhu, D. Liu, K. An, J. Feng, C. Liu, **K. W. Ng***, H. Pan* "In Situ Reconstructed Cu/β-$Co(OH)_2$ Tandem Catalyst for Enhanced Nitrate Electroreduction to Ammonia in Ampere-Level" *Advanced Energy Materials* 14 (41), 2402805 (2024) (* co-corresponding authors)
16. J. Lin, W. Fang, H. Tan, H. Zhang, J. Dai, Z. Liu, S. Liu, J. Chen, R. Wu, H. Xu, **K. W. Ng**, P. Xiao, B. Liu "Ultrathin Niobium-Doped Indium Oxide Active Layer Enables High-Performance Phototransistors for Driving Quantum-Dot Light-Emitting Diodes" *Laser & Photonics Reviews* 18 (11), 2400276 (2024)
17. T. Ding, Y. M. Song, M. W. Wang, H. Liu, J. Jiang, J. C. Xu, H. C. Liu*, **K. W. Ng*,** S. P. Wang*, "Atomic Layer-Deposited Silane Coupling Agent for Interface Passivation of Quantum Dot Light-Emitting Diodes" *The Journal of Physical Chemistry Letters* 15 (36), 9233-9238 (2024) (* co-corresponding authors)
18. D. Liu, S. Peng, L. Qiao, H. Bai, K. An, C. Liu, M. Chen, K. H. Lo, **K. W. Ng**, S. Peng, W. F. Ip, H. Pan "Rational design of cocatalyst for highly improved ammonia production from photoelectrochemical nitrate reduction" *Applied Catalysis B: Environment and Energy* 351, 123980 (2024)

19. Z. Wu, Z. Lian, T. Ding, J. Li, J. Xu, J. Wang, L. Zhang, B. Wang, S. Chen, P. Xiao, H. Xu, S. P. Wang, **K. W. Ng**, "Inhibiting the phase transition of WO3 for highly stable aqueous electrochromic battery" *Journal of Energy Chemistry* 95, 86-95 (2024)
20. Z. D. Lian, B. Wang, Z. S. Wu, H. Lin, T. Ding, J. X. Wang, L. X. Zhang, J. C. Xu, P. Xiao, H. Xu, S. P. Wang, **K. W. Ng** "Water-Assisted Synthesis of Layer-Controlled CsPbBr3 Nanoplates Spontaneously Encapsulated in PbBr(OH)" *Advanced Optical Materials* 12 (19) 2400333 (2024)
21. Z. H. Zhang, S. S. Yan, Y. L. Chen, Z. D. Lian, A. Fu, Y. C. Kong, L. Li, S. C. Su, **K. W. Ng**, Z. P. Wei, H. C. Liu, S. P. Wang "Air-Stable Self-Driven UV Photodetectors on Controllable Lead-Free CsCu2I3 Microwire Arrays" *ACS Applied Materials & Interfaces* 16 (8), 10398–10406 (2024)
22. H. Dai, H. Zeng, H. Li, J. Long, **K. W. Ng**, Y. Wang, B. Xu, G. Shi, Z. Chi, C. Liu "Manipulation of excited-state intramolecular proton transfer by electron-donor substitution for high performance fluoride ions sensing" *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 306, 123530 (2024)
23. L. Qiao, D. Liu, A. Zhu, J. Feng, P. Zhou, C. Liu, **K. W. Ng***, H. Pan "Nickel-facilitated in-situ surface reconstruction on spinel Co3O4 for enhanced electrochemical nitrate reduction to ammonia" *Applied Catalysis B: Environmental* 340, 123219 (2024) (* co-corresponding authors)
24. B. Li, H. Bai, Z. Yu, Y. Li, C. T. Kwok, W. Feng, S. Wang, **K. W. Ng**, "Electronic and magnetic properties of layered M3Si2Te6 (M= alkaline earth and transition metals)" *Journal of Physics: Condensed Matter* 36 (6), 065801 (2023)
25. X. Lv, J. Liu, L. Kou, **K. W. Ng***, S Wang, T Frauenheim, H Pan "Three-Dimensional Dual-Site Catalysts for Industrial Ammonia Synthesis at Dramatically Decreased Temperatures and Pressures" *ACS Catalysis* 13(20), 13561-13568 (2023) (* co-corresponding authors)
26. D. Liu, L. Qiao, S. Peng, H. Bai, C. Liu, W. F. Ip, K. H. Lo, H. Liu, **K. W. Ng**, S. Wang, X. Yang, H. Pan "Recent advances in electrocatalysts for efficient nitrate reduction to ammonia" *Advanced Functional Materials* 33 (43), 2303480 (2023)
27. P. K. Wong, S. H. Chen, M. A. Ghadikolaei, **K. W. Ng**, S. M. Y. Lee, J. C. Xu, Z. D. Lian, M. Ren, Z. Ning, N. K. Gali "Physical properties and structural characteristics of particulate matter emitted from a diesel engine fueled with biodiesel blends" *Environmental Pollution* 333, 122099 (2023)
28. Y. Deng, Z. Yang, T. Xu, H. Jiang, **K. W. Ng**, C. Liao, D. Su, Y. Pei, Z. Chen, G. Wang, X. Lu "Band alignment and electrical properties of NiO/β-Ga2O3 heterojunctions with different β-Ga2O3 orientations" *Applied Surface Science* 622, 156917 (2023)
29. D. Liu, L. Qiao, Y. Chen, P. Zhou, J. Feng, C. C Leong, **K. W. Ng**, S. Peng, W. F. Ip, H. Pan "Electrocatalytic reduction of nitrate to ammonia on low-cost manganese-incorporated Co3O4 nanotubes" *Applied Catalysis B: Environmental* 324, 122293 (2023)
30. B. Qiao, S. Wang, Z. Zhang, Z. Lian, Z. Zheng, Z. Wei, L. Li, **K. W. Ng***, S. Wang*, Z. Liu* "Photosensitive Dielectric 2D Perovskite Based Photodetector for Dual Wavelength Demultiplexing" *Advanced Materials* 35(21), 2300632 (* co-corresponding authors)
31. M. Chen, D. Liu, L. Qiao, P. Zhou, J. Feng, **K. W. Ng**, Q. Liu, S. Wang, H. Pan "In-situ/operando Raman techniques for in-depth understanding on electrocatalysis" *Chemical Engineering Journal* 461, 141939 (2023)
32. L. Qiao, A. Zhu, D. Liu, J. Feng, Y. Chen, M. Chen, P. Zhou, L. Yin, R. Wu, **K. W. Ng***, H. Pan "Crystalline phosphides/amorphous oxides composite for energy-saving hydrogen production assisted by efficient urea oxidation reaction" *Chemical Engineering Journal* 454, 140380 (2023) (* co-corresponding authors)

33. H. X. An, B. S. Qiao, Z. H. Zhang, Z. D. Lian, Z. Wei, X. S. Li, Q. G. Zeng, B. Wang, **K. W. Ng***, S. P. Wang "Ultraviolet photodetector based on RbCu2I3 microwire" *Nanotechnology* 34(14), 145402 (2023) (* co-corresponding authors)
34. Z. D. Lian, B. Wang, Z. S. Wu, H. Lin, S. S. Yan, J. L. Li, K. Zhang, Q. G. Zeng, J. C. Xu, S. Chen, S. P. Wang, **K. W. Ng*** "Highly Stable CsPbBr3 Perovskite Nanocrystals Encapsulated in Metal–Organic Frameworks for White Light-Emitting Diodes" *ACS Applied Nano Materials* 6 (3), 1808-1816 (2023)
35. Y. P. Zhao, Z. H. Zhang, S. S. Yan, B. S. Qiao, Z. D. Lian, Z. P. Wei, F. C. C. Ling, H. Y. Chen, S.C. Su, **K. W. Ng***, S. P. Wang "A photo-switchable rectifier based on the MAPbBr 3–MAPbCl 3 halide perovskite heterostructure for dual-wavelength optical communications" *Journal of Materials Chemistry C,* 11 (34), 11697-11704 (2023)
36. Z. Zhang, P. Zheng, S. S. Yan, B. S. Qiao, **K. W. Ng**, H. C. Liu, S. P. Wang, Z. Wei "Ultrasensitive Perovskite Photodetector for Filter-Free Color Single-Pixel Imaging" *Advanced Optical Materials* 11 (2), 2201847 (2023)
37. B. Li, H. Bai, S. Shen, **K. W. Ng***, H. Pan*, "Tunable interstitial anionic electrons in layered MXenes" *Journal of Physics: Condensed Matter*, 35 (3), 034001 (2022) (* co-corresponding authors)
38. S. Yan, Y. Kong, Z. Zhang, Z. Wu, Z. Lian, Y. Zhao, S. Su, L. Li, S. Wang, **K. W. Ng** "Enhanced Optoelectronic Performance Induced by Ion Migration in Lead-Free CsCu2I3 Single-Crystal Microrods" *ACS Applied Materials & Interfaces*, 14 (44), 49975-49985 (2022)
39. M. Chen, D. Liu, J. Feng, P. Zhou, L. Qiao, W. Feng, Y. Chen, K. W. Ng, S. Wang, W. F. Ip, H. Pan, "In-situ generation of Ni-CoOOH through deep reconstruction for durable alkaline water electrolysis" *Chemical Engineering Journal* 443, 136432 (2022)
40. Z. Wu, Z. Lian, S. Yan, J. Li, J. Xu, S. Chen, Z. Tang, S. Wang, **K. W. Ng***, "Extraordinarily Stable Aqueous Electrochromic Battery Based on Li4Ti5O12 and Hybrid Al3+/Zn2+ Electrolyte" *ACS Nano* 16(8), 13199-13210 (2022) (Impact Factor = 18)
41. P. K. Wong, M. A. Ghadikolaei, S. H. Chen, A. A. Fadairo, **K. W. Ng**, S. M. Y. Lee, J. Xu, Z. Lian, S. Li, H. C. Wong, J. Zhao, Z. Ning, N. K. Gali, "Physicochemical and cell toxicity properties of particulate matter (PM) from a diesel vehicle fueled with diesel, spent coffee ground biodiesel, and ethanol" *Science of The Total Environment*, 824, 153873 (2022)
42. M. Li, W. Luo, H. Sun, M. Zhang, **K. W. Ng**, F. Wang, X. Cheng "Low-cost preparation of durable, transparent, superhydrophobic coatings with excellent environmental stability and self-cleaning function" *Surface and Coatings Technology,* 128367 (2022)
43. W. Liu, **K. W. Ng**, H. Lin, Z. Lian, S. Su, S. Wang "One-step synthesized single component white emitting carbon microspheres for lighting" *Journal of Luminescence*, 242, 118606 (2022)
44. M. Li, W. Luo, J. Xu, J. Zhang, K.W. Ng, X. Cheng "Fabrication and oxidation of amorphous Zr-based alloy for imprint lithography" *Microelectronic Engineering*, 256, 111722 (2022)
45. M. Ghadikolaei, P. Wong, S. Chen, **K. W. Ng**, J. Xu "Effect Of Vehicle Light On The Nanostructure Of Particulate Matters Emitted From Diesel And Gasoline Vehicles" WIT Transactions on Ecology and the Environment 252, 125-133 (2021)
46. J. Y. Dong*, **K. W. Ng***, Y. Song, J. Li, Y. Kong, M. Wang, J. Xu, L. Li, S. Chen, Z. Tang, S. Wang "Observation and Suppression of Stacking Interface States in Sandwich-Structured Quantum-Dot Light-Emitting Diodes" *ACS Applied Materials & Interfaces*, 13 (47), 56630-56637 (2022) (*co-first authors)
47. M. Li, W. Luo, H. Sun, J. Xu, **K. W. Ng**, X. Cheng "Micropatterned Amorphous Zr-Based Alloys Coated with Silica Nanoparticles as Superhydrophobic Surfaces against Abrasion" *ACS Applied Nano Materials*, Accepted (https://doi.org/10.1021/acsanm.1c02780)

48. R. Liu, J. Dong, M. Wang, Q. Yuan, W. Ji, J. Xu, W. Liu,S. Su, **K. W. Ng***, Z. Tang*, S. Wang* "Efficiency Improvement of Quantum Dot Light-Emitting Diodes via Thermal Damage Suppression with HATCN" *ACS Applied Materials & Interfaces,* 13 (41), 49058-49065 (2021) (*co-corresponding authors)
49. S. Yan, K. Wang, G. Xing, J. Xu, S. Su, Z. Tang, S. Wang, **K. W. Ng** "Robust Ultralong Lead Halide Perovskite Microwire Lasers" *ACS Appl. Mater. Interfaces* 13 (32) 38458–38466 (2021)
50. W. Liu*, **K. W. Ng***, H. Lin, Z. Dai, J. Xu, S. Su, Z. Tang, S. Wang "Stable UV-Pumped White Light-Emitting Diodes Based on Anthracene-Coated CsCu2I3" *The Journal of Physical Chemistry C* 125, 13076 (2021) (*co-first authors)
51. H. Lin*, Q. Wei*, **K. W. Ng***, J. Dong, J. Li, W Liu, S. Yan, S. Chen, G. Xing, X. Tang, Z. Tang, S. Wang, "Stable and Efficient Blue-Emitting CsPbBr3 Nanoplatelets with Potassium Bromide Surface Passivation" *Small* 2101359 (2021) (*co-first authors)
52. H. Bai, H. Ai, B. Li, D. Liu, K. H. Lo, **K. W. Ng**, X. Shi, Y. Kawazoe, H. Pan "CNSi/MXene/CNSi: Unique Structure with Specific Electronic Properties for Nanodevices" Small, 2101482 (2021)
53. Y. Zhao, B. He, E. Liu, J. Li, L. Wang, S. Chen, Y. Chen, Z. Tan, **K. W. Ng*,** S. Wang*, Z. Tang, S. Qu* "Aluminum-Based Surface Polymerization on Carbon Dots with Aggregation-Enhanced Luminescence" *The Journal of Physical Chemistry Letters* 12 (19), 4530-4536 (2021) (*co-corresponding authors)
54. D. Liu, H. Ai, M. Chen, P. Zhou, B. Li, D. Liu, X. Du, K. H. Lo, **K. W. Ng**, S. Wang, S. Chen, G. Xing, J. Hu, H. Pan "Multi‐Phase Heterostructure of CoNiP/Co_xP for Enhanced Hydrogen Evolution Under Alkaline and Seawater Conditions by Promoting H2O Dissociation" *Small* 17 (17), 2007557 (2021)
55. S. Yan, Y. Ma, Y. Kong, J. Jiang, X. Xie, S. Su, Z. Tang, L. Shen, S. Wang, **K. W. Ng** "Freestanding $CH_3NH_3PbBr_3$ single-crystal microwires for optoelectronic applications synthesized with a predefined lattice framework" *Journal of Materials Chemistry C* 9 (14), 4771-4781 (2021)
56. B. Li, J. Geng, H. Ai, Y. Kong, H. Bai, K. H. Lo, **K. W. Ng*,** Y. Kawazoe, H. Pan* "Design of 2D materials–$MSi_2C_xN_{4-x}$ (M= Cr, Mo, and W; x= 1 and 2) with tunable electronic and magnetic properties" *Nanoscale* 13 (17), 8038-8048 (2021) (*co-corresponding authors)
57. J. Geng, K. An, I. Chan, H. Ai, K. H. Lo, **K. W. Ng**, Y. Kawazoe, H. Pan "Ab initio design of a new family of 2D materials: transition metal carbon nitrogen compounds (MCNs)" *Journal of Materials Chemistry C* 9 (14), 4748-4756 (2021)
58. X. Feng, Q. Guo, J. Xiu, Z. Ying, **K. W. Ng**, L. Huang, S. Wang, H. Pan, Z. Tang, Z. He "Close-loop recycling of perovskite solar cells through dissolution-recrystallization of perovskite by butylamine" *Cell Reports Physical Science* 2 (2), 100341 (2021)
59. X. Wang, Q. Wang, Y. Chen, J. Li, R. Pan, X. Cheng, **K. W. Ng**, X. Zhu, T. He, J. Cheng, Z. Tang, Rui Chen "Metal-to-ligand charge transfer chirality-based sensing of mercury ions" *Photonics Research* 9 (2), 213-221 (2021)
60. Y. Chen, M. Li, W. Yan, X. Zhuang, **K. W. Ng***, X. Cheng* "Sensitive and Low-Power Metal Oxide Gas Sensors with a Low-Cost Microelectromechanical Heater" *ACS Omega* 6 (2), 1216-1222 (2021) (*co-corresponding authors)
61. W. Yan, Y. Chen, X. Zeng, G. Wu, W. Jiang, D. Wei, M. Ling, **K. W. Ng**, Y. Qin "Ultrasensitive ethanol sensor based on segregated ZnO-In2O3 porous nanosheets" *Applied Surface Science* 535, 147697 (2021)
62. W. Chen, H. Tang, Y. Chen, J. E. Heger, N. Li, L. P. Kreuzer, Y. Xie, D. Li, C. Anthony, Z. Pikramenou, **K. W. Ng**, X. W. Sun, K. Wang, P. Müller-Buschbaum "Spray-deposited PbS colloidal quantum dot solid for near-infrared photodetectors" *Nano Energy* 78, 105254 (2020)

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