董恺琛

电子邮箱：dkc22@sz.tsinghua.edu.cn
团队网站：https://kc-dong.group/
通讯地址：广东省深圳市南山区大学城
清华大学深圳国际研究生院信息楼 1203A

工作经历

2022/11-至今	清华大学深圳国际研究生院，数据与信息研究院，助理教授
2019/02–2022/09	加州大学伯克利分校，材料科学与工程系，博士后研究员 合作导师：吴军桥（Junqiao Wu）教授，姚杰（Jie Yao）教授
2019/03–2022/09	劳伦斯伯克利国家实验室，材料科学部，博士后工作人员 研究主管：吴军桥（Junqiao Wu）教授
2017/10-2019/01	清华大学，精密仪器系，科研助理 课题组负责人：尤政 院士

教育背景

2012/09-2017/10	清华大学，精密仪器系，工学博士 博士导师：尤政 院士
2014/12-2016/12	加州大学伯克利分校，材料科学与工程系，联合培养博士生 联合培养导师：吴军桥（Junqiao Wu）教授，姚杰（Jie Yao）教授
2015/07–2016/12	劳伦斯伯克利国家实验室，材料科学部，研究工作人员 研究主管：吴军桥（Junqiao Wu）教授
2008/08-2012/07	清华大学，精密仪器系，工学学士

工作任职

2023/11-至今	深圳清华大学研究院，智能无源热控技术研发中心，主任
2023/09-至今	清华大学深圳国际研究生院，双螺旋中心，副主任 中心主任：郑泉水 院士

研究方向

1. 智能光子材料（Smart Photonic Materials）：智能辐射控温材料等
2. 微机电系统（MEMS）：零功耗 MEMS 传感器等
3. 纳米光子学（Nanophotonics）：莫尔光子晶体、莫尔物理、超材料、超表面等
4. 科学智能（AI-for-Science）

奖项与荣誉

2025/01	《科学中国人》2024 年度科技人物（科技新锐）
2024/09	微系统与纳米工程（MINE）青年科学家奖
2024/03	光子与电磁学研究国际研讨会（PIERS）青年科学家奖
2023/12	国家重点研发计划（青年科学家）项目首席科学家
2022/12	深圳鹏城孔雀计划（B 类）
2022/10	国家级重点人才计划（青年项目）
2022/06	《麻省理工科技评论》全球“35 岁以下科技创新 35 人”（MIT TR35）
2018/11	中国仪器仪表学会“测量控制与仪器仪表领域全国优秀博士论文”（第一名）
2018/07	清华大学优秀博士论文
2016/10	清华之友 — 海能赤子奖学金

2011/12 清华大学电子设计竞赛优秀奖
2011/11 清华之友 — 宏乾电子奖学金
2010/11 清华之友 — 黄乾亨奖学金
2010/06 首都高校第五届机械创新设计大赛三等奖

学术服务

学会会员：中国微米纳米技术学会，中国仪器仪表学会，电气与电子工程师学会，美国光学学会，美国材料学会，美国物理学会

国际会议：2024 年第三届亚洲热科学会议分会场主席

独立审稿人(24)：Nature Photonics, Joule, Nature Sustainability, Nature Communications, Advanced Materials, ACS Nano, Advanced Functional Materials, Small, APL Photonics, IEEE Transactions on Electron Devices, Nano-Micro Letters, Advanced Materials Technologies, ACS Applied Electronic Materials, Advanced Electronic Materials, Advanced Optical Materials, Scientific Reports, Applied Physics Letters, Optics Letters, Optics Express, Advanced Intelligent Systems, ACS Applied Materials & Interfaces, Physica Status Solidi B: Basic Solid State Physics, iScience, Acta Physica Sinica.

社会服务

2023/07 深圳零一学院授课导师

2021/03 美国加州阿拉曼达郡科学与工程展会评委

期刊论文 (*共同第一作者，#通讯作者)

1. S. Yang, X. Zhao, Y. Zhang, Y. Tang[#], K. Dong[#]. CoSP: Reconfigurable Multi-state Metamaterial Inverse Design via Contrastive Pretrained Large Language Model, **submitted** (2025).
2. S. Yang, C. Li, H. Fu, Y. Tang[#], K. Dong[#]. Cauchyformer: Physics-informed Few-shot Spectrum Inference for Photonic Metasurfaces, **submitted** (2025).
3. L. Yuan, R. Shi, Y. Wu, S. Feng, Y. Fu, Y. Wei, X. Zhao, K. Dong, K. Jiang, K. Liu, X. Zhang. Wafer-scale transfer and integration of tungsten-doping vanadium dioxide films, **ACS Nano**, 19, 6, 6209-6220 (2025).
4. R. Chen, F. Meng, H. Zhang, Y. Liu, S. Yan, X. Xu, L. Zhu, J. Chen, T. Zhou, J. Zhou, F. Yang, P. Ci, X. Huang, X. Chen, T. Zhang, Y. Cai, K. Dong, Y. Liu, K. Watanabe, T. Taniguchi, C.-C. Lin, A. V. Penumatcha, I. Young, E. Chan, J. Wu, L. Yang, R. Ramesh, J. Yao. Room-temperature multiferroicity in sliding van der Waals semiconductors with sub-0.3V switching, **submitted** (2024).
5. X. Zhao*, J. Li*, K. Dong[#], J. Wu[#], Switchable and Tunable Radiative Cooling: Mechanisms, Applications, and Perspectives, ***ACS Nano***, 18, 28, 18118-18128 (2024).
6. R. Guo, L. Shan, Q. Feng, D. S. Ritchie, J. Wan, Y. Cai, J. Li, J. Shen, K. Dong, H. Zheng, F. Wang, Y. Cai, R. Huang, K. Tang, J. Wu, Mem-sensing at sub-Debye screening length scale, **submitted** (2024).
7. H. Wang, B. Yuan, X. Zhu, X. Shan, S. Chen, W. Ding, Y. Cao, K. Dong, X. Zhang, R. Gu, Y. Yao, B. Wang, J. Tang, J. Liu. Multi-stimulus Perception and Visualization by an Intelligent Liquid Metal-elastomer Architecture. ***Science Advances***, 10 eadp5215 (2024).
8. J. Li*, K. Dong*, T. Zhang, D. Tseng, C. Fang, R. Guo, J. Li, Y. Xu, C. Dun, J. J. Urban, T. Hong, C. P. Grigoropoulos, A. Javey, J. Yao, and J. Wu. Printable, emissivity-adaptive and albedo-optimized covering for year-round energy saving. ***Joule***, 7, 1-16 (2023).
9. T. Zhang*, K. Dong*,[#], J. Li, F. Meng, J. Li, S. Munagavalasa, C. P. Grigoropoulos, J. Wu, and J. Yao[#]. Twisted Moiré Photonic Crystal Enabled Optical Vortex Generation through Bound States in the Continuum. ***Nature Communications***, 14, 6014 (2023).
10. J. Li, K. Dong[#]. Scalable and Durable Temperature-stabilizing Janus Thermal Cloak. ***Joule***, 7, 1399-1414 (2023).
11. K. Dong, J. Wu. Radiative Cooling, What's Next? ***Next Energy***, 1, 100003 (2023).
12. K. Dong*,[#], J. Li*, T. Zhang, F. Gu, Y. Cai, N. Gupta, K. Tang, A. Javey, J. Yao, J. Wu[#]. Single-Pixel Reconstructive Mid-Infrared Micro-Spectrometer. ***Optics Express***, 9, 14367-14376 (2023).

13. K. Dong, D. Tseng, J. Li, S. Warkander, J. Yao, and J. Wu. Reducing Temperature Swing of Space Objects with Temperature-Adaptive Solar or Radiative Coating. ***Cell Reports Physical Science***, 3, 101066 (2022).

14. H. Zhang*, D. Raftery*, Y. Chan*, Y. Shao*, R. Chen, X. Chen, X. Huang, J. T. Reichanadter, K. Dong, S. Susarla, L. Caretta, Z. Chen, J. Yao, P. Fischer, J. B. Neaton, W. Wu, D. A. Muller, R. J. Birgeneau, and R. Ramesh. Room-temperature skyrmion lattice in a layered magnet $(Fe_{0.5}Co_{0.5})_5GeTe_2$. ***Science Advances***, 8, abm7103 (2022).

15. D. Wang, K. Dong, J. Li, C. Grigoropoulos, J. Yao, J. Hong, and J. Wu. Low-loss, geometry-invariant optical waveguides with near-zero-index materials. ***Nanophotonics***, 11, 4747-4753 (2022).

16. K. Tang*, K. Dong*, J. Li*, M. P. Gordon, F. G. Reichertz, H. Kim, Y. Rho, Q. Wang, C.-Y. Lin, C. P. Grigoropoulos, A. Javey, J. J. Urban, J. Yao, R. Levinson, and J. Wu. Temperature Adaptive Radiative Coating for All-Season Household Thermal Regulation, ***Science***, 374, 1504-1509 (2021).
    - 该论文被国内外 100 多家单位和媒体报道，包括：中华人民共和国科学技术部、人民网、新华网、中国日报、中国科学院、合众国际社（United Press International）、华盛顿邮报、美国机械工程师协会、美国广播公司第七频道（ABC7）、美国科学发展协会、美国物理联合会、劳伦斯伯克利国家实验室等.

17. K. Dong*, T. Zhang*, J. Li, Q. Wang, F. Yang, Y. Rho, D. Wang, C. P. Grigoropoulos, J. Wu, and J. Yao. Flat Bands in Magic-Angle Bilayer Photonic Crystals at Small Twists, ***Physical Review Letters***, 126, 223601 (2021).
    - 该论文被选为当期的“编辑推荐（Editors' Suggestion）”论文.
    - 被加州大学伯克利分校材料科学与工程系报道.

18. K. Tang*, K. Dong*, C. J. Nicolai, Y. Li, J. Li, S. Lou, C.-W. Qiu, D. H. Raulet, J. Yao, and J. Wu. Millikelvin-resolved Ambient Thermography, ***Science Advances***, 6, eabd8688 (2020).
    - 该论文被杂志《Berkeley Engineer》作为封面专栏报道.

19. G. Xu, K. Dong, Y. Li, H. Li, K. Liu, L. Li, J. Wu, and C.-W. Qiu. Tunable Analog Thermal Material, ***Nature Communications***, 11, 6028 (2020).

20. K. Tang, X. Wang, K. Dong, Y. Li, J. Li, B. Sun, X. Zhang, C. Dames, C. Qiu, J. Yao, and J. Wu, A Thermal Radiation Modulation Platform by Emissivity Engineering with Graded Metal-Insulator Transition, ***Advanced Materials***, 32, 1907071 (2020).
    - 该论文被以下单位和媒体报道：加州大学伯克利分校工程学院、Materials Views China.

21. K. Dong*, S. Hong*, Y. Deng*, H. Ma, J. Li, X. Wang, J. Yeo, L. Wang, S. Lou, K. B. Tom, K. Liu, Z. You, Y. Wei, C. P. Grigoropoulos, J. Yao, and J. Wu. A Lithography-Free and Field-Programmable Photonic Metacanvas, ***Advanced Materials***, 30, 1703878 (2018).
    - 该论文被选为当期的内封底论文（Inside Back Cover Article）.
    - 被以下单位和媒体报道：中国微米纳米技术学会、清华大学、清华大学科研院、清华大学精密仪器系、加州大学伯克利分校工程学院、加州大学伯克利分校材料科学与工程系、Nanowerk.
    - 被收录到专业书籍《Nanoengineering: The Skills and Tools Making Technology Invisible》中.

22. K. Dong, H. S. Choe, X. Wang, H. Liu, B. Saha, C. Ko, Y. Deng, K. B. Tom, S. Lou, L. Wang, C. P. Grigoropoulos, Z. You, J. Yao, and J. Wu. A 0.2 V Micro-Electromechanical Switch Enabled by a Phase Transition, ***Small***, 14, 1703621 (2018).
    - 该论文被选为当期的封面论文（Cover Article）.

23. K. Dong*, Y. Deng*, X. Wang, Kyle B. Tom, Z. You, and J. Yao. Subwavelength Light Confinement and Enhancement Enabled by Dissipative Dielectric Nanostructures, ***Optics Letters***, 43, 1826-1829 (2018).

24. X. Wang*, K. Dong*, H. S. Choe, H. Liu, S. Lou, K. B. Tom, H. A. Bechtel, Z. You, J. Wu, and J. Yao. Multifunctional Microelectro-Opto-Mechanical Platform Based on Phase-Transition Materials, ***Nano Letters***, 18, 1637-1643 (2018).

25. 董恺琛, 娄帅, 姚杰, 吴军桥, 尤政. 脉冲激光沉积薄膜的残余应力测量, ***光学精密工程***, 26, 70-76 (2018).

26. Y. Deng*, X. Wang*, Z. Gong*, K. Dong, S. Lou, N. Pégard, K. B. Tom, F. Yang, Z. You, L. Waller, and J. Yao. All-Silicon Broadband Ultraviolet Metasurfaces, ***Advanced Materials***, 30, 1802632 (2018).

27. H. S. Choe, J. Suh, C. Ko, K. Dong, S. Lee, J. Park, Y. Lee, K. Wang, and J. Wu. Enhancing Modulation of Thermal Conduction in Vanadium Dioxide Thin Film by Nanostructured Nanogaps, ***Scientific Reports***, 7, 7131 (2017).

28. K. Dong#, S. Lou, H. S. Choe, K. Liu, Z. You, J. Yao, and J. Wu#. Stress Compensation for Arbitrary Curvature Control in Vanadium Dioxide Phase Transition Actuators, ***Applied Physics Letters***, 109, 023504 (2016).

29. J. Hou, X. Wang, D. Fu, C. Ko, Y. Chen, Y. Sun, S. Lee, K. X. Wang, K. Dong, Y. Sun, S. Tongay, L. Jiao, J. Yao, K.

Liu, and J. Wu. Modulating Photoluminescence of Monolayer Molybdenum Disulfide by Metal-Insulator Phase Transition in Active Substrates, ***Small***, 12, 3976-3984 (2016).

30. X. Wang, Z. Gong, K. Dong, S. Lou, J. Slack, A. Anders, and J. Yao. Tunable Bragg Filters with a Phase Transition Material Defect Layer, ***Optics Express***, 24, 20365-20372 (2016).
31. W. Fan, X. Zhu, F. Ke, Y. Chen, K. Dong, J. Ji, B. Chen, S. Tongay, J. W. Ager, K. Liu, H. Su, and J. Wu. Vibrational Spectrum Renormalization by Enforced Coupling Across the Van der Waals Gap between MoS_2 and WS_2 Monolayers, ***Physical Review B***, 92, 241408 (2015).

会议报告

1. K. Dong. Zero-power Phase-change Smart Micro/nano-devices. *Microsystems & Nanoengineering (MINE 2024)*, Xi'an, 2024.
2. K. Dong, J. Li, K. Tang, and T. Zhang. Zero-power Smart Thermal Management by Temperature-adaptive Radiative Coatings. *The Third Asian Conference on Thermal Sciences (ACTS 2024)*, Shanghai, 2024.
3. K. Dong, J. Li, K. Tang, and T. Zhang. Zero-power Smart Thermal Management by Temperature-adaptive Radiative Coatings. *PhotonIcs and Electromagnetics Research Symposium (PIERS) 2024*, Chengdu, 2024.
4. K. Dong, J. Li, K. Tang, and T. Zhang. Zero-power Smart Thermal Management by Temperature-adaptive Radiative Coatings. *25th Annual Conference of the Chinese Society of Micro-Nano Technology & 14th International conference of the Chinese Society of Micro-Nano Technology*, Shenzhen, 2023.
5. K. Dong. Zero-power Smart Micro-devices Based on the Phase-change Material of Vanadium Dioxide, *Guanggu Forum, The Chinese Optical Society Academic Conference*, Wuhan, 2023. (Invited)
6. J. Wu, J. Li, K. Dong, D. Tseng, and K. Xu. Temperature Adaptive Solar and Radiative Coating for Thermal Management of Terrestrial and Space Objects, *Materials Research Society (MRS) spring meeting*, 2023.
7. J. Wu, J. Li, T. Zhang, K. Dong, and J. Yao. Programmable Photonics with Metal Insulator Transition, *Materials Research Society (MRS) spring meeting*, 2023.
8. K. Dong, T. Zhang, J. Li, Q, Wang, F. Yang, Y. Rho, D. Wang, C. P. Grigoropoulos, J. Wu, and J. Yao. Magic-Angle Flat Bands and Light Localization in Bilayer Honeycomb Photonic Crystals with A Small Twist, *Materials Research Society (MRS) spring meeting*, 2022.
9. J. Li, K. Tang, K. Dong, M. P. Gordon, F. G. Reichertz, H. Kim, Y. Rho, Q. Wang, C.-Y. Lin, C. P. Grigoropoulos, A. Javey, J. J. Urban, J. Yao, R. Levinson, and J. Wu. Self-Adaptive Radiative Cooler for Maximizing Year-Round Energy Saving of Households, *Conference on Lasers and Electro-Optics (CLEO)*, 2022.
10. K. Tang, K. Dong, J. Li, M. P. Gordon, F. G. Reichertz, H. Kim, Y. Rho, Q. Wang, C.-Y. Lin, C. P. Grigoropoulos, A. Javey, J. J. Urban, J. Yao, R. Levinson, and J. Wu. Temperature-adaptive Radiative Coating for All-Season Household Thermal Regulation by VO_2 Based Metamaterials, *Photonics and Electromagnetics Research Symposium (PIERS)*, 2022.
11. Y. Deng, X. Wang, Z. Gong, K. Dong, S. Lou, N. Pégard, K. B. Tom, F. Yang, Z. You, L. Waller, and J. Yao. Ultraviolet Metasurface Based on Highly Scattering Silicon Antennas. *SPIE Photonics West*, 2019.
12. X. Wang, K. Dong, H. S. Choe, H. Liu, S. Lou, K. B. Tom, H. A. Bechtel, Z. You, J. Wu, and J. Yao. A Multifunctional Micro-Electro-Opto-Mechanical (MEOM) Platform Based on Phase-transition Materials, *Conference on Lasers and Electro-Optics (CLEO)*, 2018.
13. K. Dong, S. Hong, Y. Deng, H. Ma, J. Li, X. Wang, J. Yeo, L. Wang, S. Lou, K. B. Tom, K. Liu, Z. You, Y. Wei, C. P. Grigoropoulos, J. Yao, and J. Wu. A Reprogrammable Photonic Meta-Platform, *Conference on Lasers and Electro-Optics (CLEO)*, 2018.
14. X. Wang, Z. Gong, K. Dong, S. Lou, J. Slack, A. Anders, and J. Yao. All-solid-state tunable Bragg filters based on a phase transition material, *Conference on Lasers and Electro-Optics (CLEO)*, 2017.

特邀讲座

1. 董恺琛，唐城，丁也，王乐韵，"创造吧，中国青年"，2024 科技青年论坛，浦江创新论坛，2024/09/09. (圆桌对话)
2. 董恺琛，"零功耗智能微纳器件与莫尔光子晶体"，北京大学集成电路学院, 2024/06/12.

3. 董恺琛，“零功耗智能微纳器件与莫尔光子晶体”，清华大学精密仪器系，2024/06/11.
4. 董恺琛，“一个材料能做什么？基于相变材料二氧化钒的智能微机械和纳米光子器件”，南方科技大学材料科学与工程系，2023/12/08.
5. 董恺琛，“一个材料能做什么？基于相变材料二氧化钒的智能微机械和纳米光子器件”，上海交通大学机械学院，2023/11/29. (1.3 万人在线观看)
6. 董恺琛，“一个材料能做什么？基于相变材料二氧化钒的智能微机械和纳米光子器件”，清华大学深圳国际研究生院，2023/11/28.
7. 董恺琛，开学典礼讲话，数据与信息研究院，清华深圳国际研究生院，2023/09/09.
8. 董恺琛，“基于二氧化钒的 MEMS 开关和红外智能柔性薄膜技术”，清华大学智能微系统团队学术研讨会，2023/04/29. (主题报告)
9. 董恺琛，“为光子辐射散热技术赋予智能”，清华大学深圳国际研究生院数据与信息研究院，2023/02/25. (主题报告)
10. 董恺琛，“基于二氧化钒的无源温度自适应柔性覆层”，四川大学材料科学与工程学院，2023/02/21.
11. 董恺琛，“为辐射散热材料赋予智能”，世界科技青年论坛，2022/11/14.
12. 董恺琛，“最平凡的作品”，清华大学精密仪器系成立十周年系列讲座，2022/07/22.
13. 董恺琛，“Smart radiative cooling for all-season household thermal regulation”. 清华大学精密仪器系博士生论坛，2022/06/12. (主题报告)
14. K. Dong, “Smart radiative cooling for all-season household thermal regulation”, MSE Seminar at U.C. Berkeley，2022/04/07.
15. K. Dong, “Smart radiative cooling for all-season household thermal regulation”, Engineering and Applied Science Forum，2022/03/13.