Qiang Fu

August 2024

Room 2207, Al Khwarizmi Building 1
King Abdullah University of Science and Technology (KAUST)
Thuwal, 23955-6900, Saudi Arabia
https://fuqiangx.github.io
https://scholar.google.com/citations?user=qj1XZtEAAAAJ&hl
https://orcid.org/0000-0001-6395-8521
+966 12 8080264, +966 570985909
qiang.fu@kaust.edu.sa

Work Experiences

2017–present	Research Scientist	King Abdullah University of Science and Technology (KAUST).
2016–2017	Research Associate Professor	School of Information Science and Technology, ShanghaiTech University.
2014–2016	Postdoctoral Research Fellow	Visual Computing Center, King Abdullah University of Science and Technology (KAUST).
2012–2014	Assistant Research Fellow	Key Laboratory of Computational Optical Imaging Techniques, Academy of Opto-Electronics, Chinese Academy of Sciences.

Education

2012	Ph.D.	Optical Engineering	Graduate University of Chinese Academy of Sciences (UCAS)
2007	B.Sc.	Mechanical Engineering	University of Science and Technology of China (USTC)

Research Topics

Qiang Fu's research interests lie in the multidisciplinary research areas of computational imaging and display that develops emerging and fast-growing visual computing technologies by integrating state-of-the-art techniques in computer vision, computer graphics, optics, machine learning, inverse problem, and micro/nano-fabrication. The scientific challenges to overcome include novel theories, methods and devices for multi-modal imaging (e.g. high dynamic range, light field, polarization, depth), computational flat optics, lensless imaging, hyperspectral imaging and display, and computational optical fabrication. Such developing technologies could boost the image performance of conventional image acquisition systems and add to new imaging capabilities to reveal the unseen phenomena in various areas, including photography, machine vision, virtual/mixed reality, underwater imaging, medical imaging, microscopy, endoscopy, remote sensing, and so on.

Specifically, major research themes are focused on

- novel imaging and display system design frameworks from (hardware-)end to (software-)end;
- advanced algorithms (compressive sensing, deep learning) to solve inverse problems in imaging and display;
- multi-modal machine vision devices with efficient information encoding and decoding;
- tailored micro/nano-fabrication techniques (e.g., photolithography, nano 3D printing) for miniaturized computational flat optics and lensless imaging;
- applications of the techniques in scientific and industrial scenarios.

Technical Skills

- Extensive hands-on experience in micro/nano-fabrication for diffractive optical elements (DOEs) on fused silica substrates, i.e., routine work experience in Class 100 cleanroom; laser direct writing with Heidelberg DWL2000 and μPG501 for mask making; i-line photolithography with EVG6200∞; reactive-ion etching with PlasmLab 100-ICP 380; metal sputtering with DC or RF sources; PECVD for silicon dioxide deposition with PlasmaLab 100; E-beam lithography with Crestec CABL 9000C and JEOL JBX-6300; 3D nonoprinting with nanoscribe Photonic Professional GT; microstructure measurement with Dektak 8 and Zygo NV7300; SEM with FEI Quanta 3D FEG; and related wet processing skills.
- Programming with Matlab, Python, C++, Qt for the design of DOEs and image reconstruction algorithm development (inverse problems);
- Optical system design and analysis with ZEMAX, TracePro and CodeV;
- Lithography editing tools L-Edit, KLayout, and programmable GDSII tool `gdspy`;
- Proficient opto-mechanical design with Solidworks, AutoCAD etc.

Academic Services

- Outstanding Reviewer (Outstanding Reviewer Recognition) 2024 award by Optica Publishing Group.
- Reviewer for Springer Nature Group Nature.
- Reviewer for ACM SIGGRAPH 2016, SIGGRAPH Asia 2017, SIGGRAPH 2019, SIGGRAPH 2022, SIGGRAPH Asia 2023, and SIGGRAPH Asia 2024.
- Reviewer for Elsevier Computer & Graphics, Optics and Lasers in Engineering, Measurement, Expert Systems With Applications, Neurocomputing, Optics and Laser Technology, and Data in Brief.
- Reviewer for IEEE Transactions on Image Processing, Transactions on Pattern Analysis and Machine Intelligence, Transactions on Visualization and Computer Graphics, CVPR 2024, Transactions on Computational Imaging, and Transactions on Industrial Informatics.
- Reviewer for Optica Optics Express, Optics Letters, Applied Optics, Optics Continuum, JOSA A, and Photonics Research.
- Reviewer for Frontiers Media Frontiers in Plant Science.

Teaching Experiences

- Harvard Bok Higher Education Teaching Certificate, online short course, 2023.
- Mentored 10 master and PhD students in Prof. Wolfgang Heidrich's group at Visual Computing Center, King Abdullah University of Science and Technology, 2017 – 2023.
- Delivered remote guest lectures on Computational Diffractive Imaging in Prof. Jingang Zhang's course at University of Chinese Academy of Sciences, 2020.
- Mentored 3 master and PhD students in Prof. Jingyi Yu's Lab at School of Information Science and Technology, ShanghaiTech University, 2016.

Talks

- Computational Imaging with Diffractive Optics. Beijing Academy of Artificial Intelligence. November 2021 (virtual).
- Applications of diffractive optical elements (DOEs) in high dynamic range computational imaging. International Computational Imaging Conference (CITA2021), September 2021 (Hangzhou, virtual).
- Megapixel adaptive optics: towards correcting large-scale distortions in computational cameras. ACM SIGGRAPH. August 2018 (Vancouver, Canada). (*Presented with Congli Wang.)
- Computational Diffractive Imaging: Where Computation and Optics Meet. Northwestern Polytechnical University. April 2017 (Xi'an, China).
- Computational Imaging: A Systematic View. Institute of Automation, Chinese Academy of Sciences. May 2016 (Beijing, China).
- Computational Diffractive Imaging: Design, Fabrication and Applications. Dagstuhl Seminar on Computational Imaging, May 2015 (Dagstuhl, Germany).
- Diffractive Optical Elements: Theories, Methods, Fabrication and Applications in Computational Imaging. Academy of Opto-Electronics, Chinese Academy of Sciences, March 2015 (Beijing, China).

Publications

[1] Xinge Yang, Qiang Fu, and Wolfgang Heidrich. Curriculum learning for ab initio deep learned refractive optics. Nat. Comm.,15, no. 1 (2024): 6572.

[2] Zheng Shi, Ilya Chugunov, Mario Bijelic, Geoffroi Côté, Jiwoon Yeom, Qiang Fu, Hadi Amata, Wolfgang Heidrich, and Felix Heide. Split-Aperture 2-in-1 Computational Cameras. ACM Trans. Graph.,43, no. 4 (2024): 1-19.

[3] Ethan Tseng, Seung-Hwan Baek, Grace Kuo, Nathan Matsuda, Andrew Maimone, Florian Schiffers, Praneeth Chakravarthula, Qiang Fu, Wolfgang Heidrich, Douglas Lanman, and Felix Heide. Neural Étendue expander for ultra-wide-angle high-fidelity holographic display. Nat. Comm.,15, 2907, 2024.

[4] Qiang Fu, Matheus Souza, Eunsue Choi, Suhyun Shin, Seung-Hwan Baek, and Wolfgang Heidrich. Limitations of Data-Driven Spectral Reconstruction– Optics-Aware Analysis and Mitigation. arXiv preprint, arXiv:2401.03835, 2024.

[5] Yidan Zheng, Qiang Fu, Hadi Amata, Praneeth Chakravarthula, Felix Heide, and Wolfgang Heidrich. Hexagonal Diffractive Optical Elements. Opt. Express, 31(26): 43864-43876, 2023.

[6] Hadi Amata, Qiang Fu, and Wolfgang Heidrich. Additive fabrication of SiO 2-based micro-optics with lag-free depth and reduced roughness. Opt. Express, 31(25): 41533-41545, 2023.

[7] Hadi Amata, Qiang Fu, and Wolfgang Heidrich. Additive Diffractive Optical Elements Fabrication by PECVD Deposition of SiO2 and Lift-off Process. SPIE Digital Optical Technologies, vol. 12624, pp. 23-28, 2023.

[8] Xinge Yang, Qiang Fu, and Wolfgang Heidrich. Aberration-Aware Depth-from-Focus. IEEE Trans. Pattern Anal. Mach. Intell. , 1–11, 2023.

[9] Xinge Yang, Qiang Fu, Yunfeng Nie, and Wolfgang Heidrich. Image Quality Is Not All You Want: Task-Driven Lens Design for Image Classification. arXiv preprint , arXiv:2305.17185, 2023.

[10] Qizhou Wang, Qiang Fu, Maksim Makarenko, Arturo Burguete Lopez, Wolfgang Heidrich, and Andrea Fratalocchi. Generalization of learned Fourier-based phase-diversity wavefront sensing. CLEO: Applications and Technology, pp. JW2A-93, 2023.

[11] Zhisheng Zhou, Qiang Fu, Jingang Zhang, and Yunfeng Nie. Data-driven Broadband Achromatic Metalens via First-principle End-to-end Inverse Design. Opt. Express, 31(7):11729–11744, 2023.

[12] Yuqi Li, Qiang Fu, and Wolfgang Heidrich. Extended Depth-of-Field Projector using Learned Diffractive Optics. IEEE VR 2023.

[13] Qiang Fu, Dong-Ming Yan, and Wolfgang Heidrich. Diffractive lensless imaging with optimized Voronoi-Fresnel phase. Opt. Express, 30(25):45807–45823, 2022.

[14] Zhisheng Zhou, Jingang Zhang, Qiang Fu, and Yunfeng Nie. Phase-diversity wavefront sensing enhanced by a Fourier-based neural network. Opt. Express, 30(19):34396–34410, 2022.

[15] William Thompson, Christian Marois, Garima Singh, Olivier Lardière, Benjamin Gerard, Qiang Fu, and Wolfgang Heidrich. Performance of the FAST self coherent camera at the NEW-EARTH lab and a simplified SCC measurement algorithm. In Adaptive Optics Systems VIII, volume 12185, pages 724–735. SPIE, 2022.

[16] Garima Singh, William Thompson, Olivier Lardière, Christian Marois, Mamadou N'Diaye, Adam B Johnson, Jean-Pierre Véran, Glen Herriot, Benjamin Gerard, Qiang Fu, et al. Pupil-plane LLOWFS simulation and laboratory results from NEW-EARTHs high-contrast imaging testbed. In Adaptive Optics Systems VIII, volume 12185, pages 1592–1603. SPIE, 2022.

[17] Olivier Lardière, Benjamin Gerard, William Thompson, Christian Marois, Jean-Pierre Véran, Célia Blain, Wolfgang Heidrich, and Qiang Fu. Optical design and preliminary results of NEW EARTH, first Canadian high-contrast imaging laboratory test bench. In Adaptive Optics Systems VII, volume 11448, page 114486Y. International Society for Optics and Photonics, 2020.

[18] Christian Marois, Olivier Lardière, William Thompson, Garima Singh, Adam Johnson, Tim Hardy, Joeleff Fitzsimmons, Benjamin L Gerard, Suresh Sivanandam, Simon Thibault, Dmitry Savransky, Colin Bradley, Rebecca Jensen-Clem, Mathieu Demers, Qiang Fu, Wolfgang Heidrich, and Mamadou N'Diaye. Deployment of focal plane WFS technologies on 8-m telescopes: from the Subaru SPIDERS pathfinder, to the facility-class GPI 2.0 CAL2 system. In Adaptive Optics Systems VIII, volume 12185, pages 594–603. SPIE, 2022.

[19] Benjamin L Gerard, Javier Perez-Soto, Vincent Chambouleyron, Maaike AM van Kooten, Daren Dillon, Sylvain Cetre, Rebecca Jensen-Clem, Qiang Fu, Hadi Amata, and Wolfgang Heidrich. Various wavefront sensing and control developments on the Santa Cruz extreme AO laboratory (SEAL) testbed. In Adaptive Optics Systems VIII, volume 12185, pages 778–790. SPIE, 2022.

[20] Zheng Shi, Yuval Bahat, Seung-Hwan Baek, Qiang Fu, Hadi Amata, Xiao Li, Praneeth Chakravarthula, Wolfgang Heidrich, and Felix Heide. Seeing through obstructions with diffractive cloaking. ACM Trans. Graph., 41(4):1–15, 2022.

[21] Jingang Zhang, Runmu Su, Qiang Fu, Wenqi Ren, Felix Heide, and Yunfeng Nie. A survey on computational spectral reconstruction methods from RGB to hyperspectral imaging. Sci. Rep., 12(1):11905, 2022.

[22] Xinge Yang, Qiang Fu, and Wolfgang Heidrich. Automatic lens design based on differentiable ray-tracing. In Computational Optical Sensing and Imaging, pages CTh4C–2. Optica Publishing Group, 2022.

[23] Xiong Dun, Qiang Fu, Haotian Li, Tiancheng Sun, Jian Wang, and Qilin Sun. Recent progress in computational imaging. 2022.

[24] Youxin Pang, Mengke Yuan, Qiang Fu, Peiran Ren, and Dong-Ming Yan. Progressive polarization based reflection removal via realistic training data generation. Pattern Recognit., 124:108497, 2022.

[25] Qiang Fu, Hadi Amata, Benjamin Gerard, Christian Marois, and Wolfgang Heidrich. Additive lithographic fabrication of a Tilt-Gaussian-Vortex mask for focal plane wavefront sensing. In Optifab 2021, volume 11889, pages 162–170. SPIE, 2021.

[26] Qiang Fu, Hadi Amata, and Wolfgang Heidrich. Etch-free additive lithographic fabrication methods for reflective and transmissive micro-optics. Opt. Express, 29(22):36886–36899, 2021.

[27] Masheal Alghamdi, Qiang Fu, Ali Thabet, and Wolfgang Heidrich. Transfer deep learning for reconfigurable snapshot HDR imaging using coded masks. In Comput. Graph. Forum., volume 40, pages 90–103. Wiley Online Library, 2021.

[28] Simeng Qiu, Qiang Fu, Congli Wang, and Wolfgang Heidrich. Linear polarization demosaicking for monochrome and colour polarization focal plane arrays. In Comput. Graph. Forum., volume 40, pages 77–89. Wiley Online Library, 2021.

[29] Qilin Sun, Congli Wang, Fu Qiang, Dun Xiong, and Heidrich Wolfgang. End-to-end complex lens design with differentiable ray tracing. ACM Trans. Graph., 40(4):1–13, 2021.

[30] Ilya Chugunov, Seung-Hwan Baek, Qiang Fu, Wolfgang Heidrich and Felix Heide. Mask-ToF: Learning Microlens Masks for Flying Pixel Removal in Time-of-Flight Imaging. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2021.

[31] Masheal Alghamdi, Qiang Fu, Ali Thabet, and Wolfgang Heidrich. Transfer Deep Learning for Reconfigurable Snapshot HDR Imaging Using Coded Masks. Computer Graphics Forum, 2021.

[32] Simeng Qiu, Qiang Fu, Congli Wang, and Wolfgang Heidrich. Linear Polarization Demosaicking for Monochrome and Color Polarization Focal Plane Arrays. Computer Graphics Forum, 2021.

[33] Zhisheng Zhou, Yunfeng Nie, Qiang Fu, Qiran Liu, and Jingang Zhang. Robust statistical phase-diversity method for high-accuracy wavefront sensing. Optics and Lasers in Engineering, 137:106335, 2021.

[34] Olivier Lardière, Benjamin Gerard, William Thompson, Christian Marois, Jean-Pierre Véran, Célia Blain, Wolfgang Heidrich, and Qiang Fu. Optical design and preliminary results of NEW EARTH, first Canadian high-contrast imaging laboratory test bench. In Adaptive Optics Systems VII, vol. 11448, pp. 114486Y. International Society for Optics and Photonics, 2020.

[35] Christian Marois, Benjamin Gerard, Olivier Lardière, Andre Anthony, Colin Bradley, Jennifer Dunn, Qiang Fu, Tim Hardy, Wolfgang Heidrich, Glen Herriot, et al. Upgrading the Gemini planet imager calibration unit with a photon counting focal plane wavefront sensor. In Adaptive Optics Systems VII, vol.11448, pp. 1144873. International Society for Optics and Photonics, 2020.

[36] Congli Wang, Qiang Fu, Xiong Dun, and Wolfgang Heidrich. Modeling classical wavefront sensors. Optics Express, 28(4):5273–5287, 2020.

[37] Youxin Pang, Mengke Yuan, Qiang Fu, and Dong-Ming Yan. Reflection removal via realistic training data generation. In ACM SIGGRAPH 2020 Posters, pages 1–2. ACM, 2020.

[38] Qilin Sun, Ethan Tseng, Qiang Fu, Wolfgang Heidrich, and Felix Heide. Learning rank-1 diffractive optics for single-shot high dynamic range imaging. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), oral, pages 1386–1396, 2020.

[39] Congli Wang, Qiang Fu, Xiong Dun, and Wolfgang Heidrich. Quantitative phase and intensity microscopy using snapshot white light wavefront sensing. Scientific Reports, 9(1):1–12, 2019.

[40] Masheal Alghamdi, Qiang Fu, Ali Thabet, and Wolfgang Heidrich. Reconfigurable snapshot HDR imaging using coded masks and inception network. In 24th International Symposium on Vision, Modeling and Visualization (VMV), pages 1–9. Eurographics Association, 2019.

[41] Simeng Qiu, Qiang Fu, Congli Wang, and Wolfgang Heidrich. Polarization demosaicking for monochrome and color polarization focal plane arrays. In 24th International Symposium on Vision, Modeling and Visualization (VMV), pages 1–8. Eurographics Association, 2019.

[42] Daniel S Jeon, Seung-Hwan Baek, Shinyoung Yi, Qiang Fu, Xiong Dun, Wolfgang Heidrich, and Min H Kim. Compact snapshot hyperspectral imaging with diffracted rotation. ACM Transactions on Graphics (TOG), 38(4):117, 2019.

[43] Congli Wang, Qiang Fu, Xiong Dun, and Wolfgang Heidrich. A model for classical wavefront sensors and snapshot incoherent wavefront sensing. In Computational Optical Sensing and Imaging, pages CM1A–4. Optical Society of America, 2019.

[44] Jingang Zhang, Yunfeng Nie, Qiang Fu, Yifan Peng, and Shuzhen Wang. Refractive telescope design with digital correction of residual chromatic aberrations. In Digital Optical Technologies 2019, volume 11062, page 110621E. International Society for Optics and Photonics, 2019.

[45] Jingang Zhang, Yunfeng Nie, Qiang Fu, and Yifan Peng. Optical–digital joint design of refractive telescope using chromatic priors. Chinese Optics Letters, 17(5):052201, 2019.

[46] Yu Zhu, Shiying Li, Xi Luo, Kang Zhu, Qiang Fu, Xilin Chen, Huixing Gong, and Jingyi Yu. SAVE: A shared augmented virtual environment for real-time mixed reality applications. Computer Animation and Virtual Worlds, 29(5):e1805, 2018.

[47] Congli Wang, Qiang Fu, Xiong Dun, and Wolfgang Heidrich. Megapixel adaptive optics: towards correcting large-scale distortions in computational cameras. ACM Transactions on Graphics (TOG), 37(4):115, 2018.

[48] Jinhui Xiong, Qiang Fu, Ramzi Idoughi, and Wolfgang Heidrich. Reconfigurable rainbow PIV for 3D flow measurement. In 2018 IEEE International Conference on Computational Photography (ICCP), pages 1–9. IEEE, 2018.

[49] Kang Zhu, Yujia Xue, Qiang Fu, Sing Bing Kang, Xilin Chen, and Jingyi Yu. Hyperspectral light field stereo matching. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 41(5):1131–1143, 2018.

[50] Jinhui Xiong, Ramzi Idoughi, Andres A Aguirre-Pablo, Abdulrahman B Aljedaani, Xiong Dun, Qiang Fu, Sigurdur T Thoroddsen, and Wolfgang Heidrich. Rainbow particle imaging velocimetry for dense 3D fluid velocity imaging. ACM Transactions on Graphics (TOG), 36(4):36, 2017.

[51] Congli Wang, Xiong Dun, Qiang Fu, and Wolfgang Heidrich. Ultra-high resolution coded wavefront sensor. Optics Express, 25(12):13736–13746, 2017.

[52] Chao Yu, Yifan Peng, Tianyi Guo, Qiang Fu, Haifeng Li, and Xu Liu. Beam shaping for multicolour light-emitting diodes with diffractive optical elements. Journal of Modern Optics, 64(4):388–395, 2017.

[53] Yujia Xue, Kang Zhu, Qiang Fu, Xilin Chen, and Jingyi Yu. Catadioptric hyperspectral light field imaging. In 2017 IEEE International Conference on Computer Vision (ICCV), pages 985–993. IEEE, 2017.

[54] Yu Zhu, Kang Zhu, Qiang Fu, Xilin Chen, Huixing Gong, and Jingyi Yu. SAVE: shared augmented virtual environment for real-time mixed reality applications. In Proceedings of the 15th ACM SIGGRAPH Conference on Virtual-Reality Continuum and Its Applications in Industry-Volume 1, pages 13–21. ACM, 2016.

[55] Felix Heide, Qiang Fu, Yifan Peng, and Wolfgang Heidrich. Encoded diffractive optics for full-spectrum computational imaging. Scientific Reports, 6:33543, 2016.

[56] Yifan Peng, Qiang Fu, Felix Heide, and Wolfgang Heidrich. The diffractive achromat full spectrum computational imaging with diffractive optics. ACM Transactions on Graphics (TOG), 35(4):31, 2016.

[57] Yifan Peng, Qiang Fu, Hadi Amata, Shuochen Su, Felix Heide, and Wolfgang Heidrich. Computational imaging using lightweight diffractive-refractive optics. Optics Express, 23(24):31393–31407, 2015.

[58] Qisheng Cai, Bin Xiangli, Qiang Fu, Lulu Qian, Yang Li, and Zheng Tan. Conceptual design of a rotating parallel-mirror-pair interferometer. In Selected Papers from Conferences of the Photoelectronic Technology Committee of the Chinese Society of Astronautics: Optical Imaging, Remote Sensing, and Laser-Matter Interaction 2013, volume 9142, page 91420I. International Society for Optics and Photonics, 2014.

[59] Linlin Pei, Min Huang, Qunbo Lü, and Qiang Fu. Effect of angle error of the double Amici prism on dispersion. Acta Optica Sinica, 33:0122003–1, 2013.

[60] Qiang Fu, Bin Xiangli, Juanjuan Jing, and Min Huang. System signal-to-noise ratio analysis based on imaging chain model in multispectral remote sensing. Acta Optica Sinica, 33(2):92–98, 2012.

[61] Qiang Fu, Bin Xiangli, Qunbo Lü, and Min Huang. Design of a dual-channel Mach-Zehnder lateral shearing interferometer for the large aperture static imaging spectrometer. Spectroscopy and Spectral Analysis, 32(2):553–557, 2012.

[62] Qiang Fu, Min Huang, Juanjuan Jing, and Bin Xiangli. Relay lens design for an LCTF multi-spectral imager. Acta Optica Sinica, 31(10):1022002–6, 2011.

[63] Qiang Fu, Zhiliang Zhou, Yan Yuan, and Bin Xiangli. Image quality evaluation of light field photography. In Image Quality and System Performance VIII, vol. 7867, page 78670F. International Society for Optics and Photonics, 2011.

[64] Zhiliang Zhou, Qiang Fu, and Bin Xiangli. Calculation of geometric parameters of Sagnac interferometers. Acta Photonica Sinica, 38(3):689–693, 2009.

Patents

[1] Xinge Yang, Qiang Fu, and Wolfgang Heidrich. Method for fully automatic lens design with curriculum learning. July 2022. US Application No. 63/358,583. Under review.

[2] Ilya Chugnov, Seung-Hwan Baek, Qiang Fu, Wolfgang Heidrich, and Felix Heide. Microlens amplitude masks for flying pixel removal in time-of-flight imaging. WO Patent 2022195537A1.

[3] Congli Wang, Xiong Dun, Qiang Fu, and Wolfgang Heidrich. Wavefront sensor and method of reconstructing distorted wavefronts, May 11 2018. WO Patent 2018083573A1.

[4] Bin Xiangli, Qiang Fu, Qunbo Lü. A lateral shearing interferometer with dual channel outputs. China Patent, CN201110415587.

PhD Thesis

Qiang Fu. Research on the imaging chain of spectral imaging systems. University of Chinese Academy of Sciences, 2012. Advisor: Prof. Bin Xiangli.

Honors and Awards

- Best poster award at KAUST Computational Imaging and Vision Conference, 2017.
- Excellent Student Award of Chinese Academy of Sciences, 2009.
- Excellent Student Award of Zutong Scholarship in XIOPM, 2008.
- First Prize of the Western Area Student Scholarship of CAS, 2008.
- Excellent Graduate of USTC, 2007.
- First Prize of Zutong Scholarship in USTC, 2007.
- Second-class Scholarship in USTC (three times), 2004-2006.