Zihuai Zhang

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Education

Princeton University **Princeton, NJ**
Ph.D. in Electrical and Computer Engineering Aug. 2016 – Oct. 2022
Dissertation project: Engineering quantum defects in diamond for quantum networks
Advisor: Nathalie de Leon

University of Science and Technology of China (USTC) **Hefei, China**
B.S. in Physics with honors Sept. 2012 – Jun. 2016
Advisor: Chuan-Feng Li

Employment

University of California, Berkeley **Berkeley, CA**
Postdoctoral Researcher with Alp Sipahigil Nov. 2022 – Present

Publications

"A telecom O-band emitter in diamond", S. Mukherjee*, **Z.-H. Zhang***, M.O. de Vries, D. Oblinsky, A. Stacey, B.C. Johnson, A.M. Edmonds, N. Palmer, M.L. Markham, G.D. Scholes, B.C. Gibson, P. Reineck, N.P. de Leon, arXiv:2211.05969 (accepted to Nano Letters)

"Neutral silicon vacancy centers in undoped diamond via surface control", **Z.-H. Zhang**, J.A. Zuber, L.V.H. Rodgers, X. Gui, P. Stevenson, A.M. Edmonds, N. Palmer, M.L. Markham, R.J. Cava, P. Maletinsky, N.P. de Leon, arXiv:2206.13698 (accepted to Phys. Rev. Lett.)

"Neutral silicon vacancy centers in diamond via photoactivated itinerant carriers", **Z.-H. Zhang**, A.M. Edmonds, N. Palmer, M.L. Markham, N.P. de Leon, Phys. Rev. Applied 19, 034022 (2023)

"Room-temperature photo-chromism of silicon vacancy centers in CVD diamond", A. Wood*, A. Lozovoi*, **Z.-H. Zhang**, S. Sharma, G.I. López-Morales, H. Jayakumar, N.P. de Leon, C.A. Meriles, Nano Letters 23, 1017-1022 (2023)

"Optically detected magnetic resonance in neutral silicon vacancy centers in diamond via bound exciton states", **Z.-H. Zhang**, P. Stevenson, G. Thiering, B.C. Rose, D. Huang, A.M. Edmonds, M.L. Markham, S.A. Lyon, A. Gali, N.P. de Leon, Phys. Rev. Lett. 125, 237402 (2020)

"Observation of an environmentally insensitive solid-state spin defect in diamond", B.C. Rose*, D. Huang*, **Z.-H. Zhang**, P. Stevenson, A.M. Tyryshkin, S. Sangtawesin, S. Srinivasan, L. Loudin, M.L. Markham, A.M. Edmonds, D.J. Twitchen, S.A. Lyon, N.P. de Leon, Science 361, 60-63 (2018)

"Heisenberg-scaling measurement of the single-photon Kerr non-linearity using mixed states", G. Chen, N. Aharon, Y.-N. Sun, **Z.-H. Zhang**, W.-H. Zhang, D.-Y. He, J.-S. Tang, Y. Kedem, C.-F. Li, G.-C. Guo, Nat. Commun. 9, 93 (2018)

"Ultrasensitive biased weak measurement for longitudinal phase estimation", **Z.-H. Zhang**, G. Chen, X.-Y. Xu, J.-S. Tang, W.-H. Zhang, Y.-J. Han, C.-F. Li, G.-C. Guo, Phys. Rev. A 94, 053843 (2016)

"Experimental demonstration of a hybrid-quantum-emitter producing individual entangled photon pairs in the telecom band", G. Chen, Y. Zou, W.-H. Zhang, **Z.-H. Zhang**, Z.-Q. Zhou, D.-Y. He, J.-S. Tang, B.-H. Liu, Y. Yu, G.-W. Zha, H.-Q. Ni, Z.-C. Niu, Y.-J. Han, C.-F. Li, G.-C. Guo, Scientific Reports 6, 26680 (2016)

Patents

"Synthetic engineered diamond materials with spin impurities and methods of making the same", N.P. de Leon, B.C. Rose, D. Huang, **Z.-H. Zhang**, A.M. Tyryshkin, S. Sangtawesin, S. Srinivasan, L. Loudin, M.L. Markham, A.M. Edmonds, D.J. Twitchen, S.A. Lyon, patent WO2019055975 (2019)

Conference Presentations

APS March Meeting, Las Vegas, NV, US, Mar. 5 - Mar. 10, 2023

Gordon Research Seminar and Conference, poster, Easton, MA, US, Jul. 23 - Jul. 29, 2022

SPIE Photonics West, virtual (on demand), Feb. 21 - Feb. 27, 2022

WE-Heraeus-Seminar, virtual (poster), Aug. 3 - Aug. 7, 2021

De Beers Diamond Research Conference, virtual (poster), Jul. 6 - Jul. 8, 2021

APS March Meeting, virtual, Mar. 15 - Mar. 19, 2021

Princeton-GIA Diamond Symposium, Princeton, NJ, US, Jan. 24, 2019

MRS Fall Meeting, Boston, MA, US, Nov. 25 - Nov. 30, 2018

Princeton Innovation, poster, Princeton, NJ, US, Nov. 8, 2018

NSF EFRI-ACQUIRE review meeting, poster, Washington, D.C., US, Sept. 20 - Sept. 21, 2018

Gordon Research Conference, poster, Easton, MA, US, Jul. 29 - Aug. 3, 2018

Teaching Experience

Teaching Assistant, ELE 302 Building Real Systems, Princeton University **2019**
Assisted students in the lab to build automated vehicles with Jeff Thompson

Honors and Awards

Early career Ph.D. award (Princeton, awarded to one student within electrical engineering) **2018**

Graduated with university honors (USTC, top 3%) **2016**

Outstanding undergraduate dissertation (USTC, top 3%) **2016**

Yan Jici talented program in physics (USTC) **2014 – 2016**

National scholarship (China, top 3%) **2014 – 2015**

Technical Expertise

Lab skills: Single center spectroscopy and magnetic resonance, bulk optical spectroscopy, pulsed electron spin resonance, operation of cryogenics, vacuum pumps, and lasers

Diamond processing skills: Thermal annealing, wet chemistry cleaning

Material characterization techniques: Atomic force microscopy, X-ray photoelectron spectroscopy, Fourier-transform infrared spectroscopy, polarized microscopy, UV-Vis absorption spectroscopy

Computer skills: Matlab, Python, Mathematica, COMSOL Multiphysics, Solidworks

Activities

Reviewer for Nature Communication, Physical Review B, ACS Photonics, Journal of the Optical Society of America B

PCCM Science Day/Dia de la Ciencia (public scientific demos in Princeton library) **2017 - 2019**

References

Available upon request