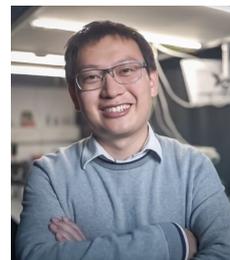


Dr. Haoran Ren
School of Physics and Astronomy
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Biography

Dr Haoran Ren is an ARC DECRA Fellow at the School of Physics and Astronomy at Monash University. He joined Monash from June 2022, before that he held a Macquarie University Research Fellowship at Macquarie University, a Humboldt Research Fellowship at LMU Munich, and postdoc at RMIT University. He got a PhD from Swinburne University of Technology in 2017. His nanophotonics research exploits the full potential and multi-dimensional nature of light and its controlled light-matter interactions at the nanoscale. His motivation is driven by fascinating optical physics and photonic applications across many topical areas in optics-related fields. Dr Ren holds a Honorary Research Fellow position at the School of Mathematical and Physical Sciences at Macquarie University. He serves as an Associate Investigator for the ARC Centre of Excellence for Transformative Meta-Optical Systems (TMOS), chair (2024-2026) of the OPTICA Photonic Metamaterials Technical Group, a member of APL Photonics Early Career Editorial Advisory Board, and a young editorial board member of International Journal of Extreme Manufacturing. He was awarded the Candidate Award for the 2023 Rising Stars of Light, the 2022 ANZOS Geoff Opat Early Career Researcher Prize, the 2017 Victoria Fellowship, and the 2016 Outstanding Self-financed Chinese Students Abroad (Special Prize). His research has been featured by the 2024 SPIE 3D Printing, Fabrication, and Manufacturing Award, Emerging Leaders in *Journal of Optics* and 2022 MQ Research Spotlight.

Qualifications

Optics, PhD, Nanophotonics manipulation of angular momentum of light for information optics, Swinburne University of Technology
20 Mar 2013 → 17 Feb 2017
Award Date: 17 Feb 2017

Employment

Research Fellow

School of Physics and Astronomy
MONASH UNIVERSITY
1 Jun 2022 → present

Chair of the Photonic Metamaterials Technical Group at OPTICA (formerly OSA)

Optica LLC
Washington, United States of America
1 Jan 2024 → 31 Dec 2026

Honorary Research Fellow

Macquarie University
Sydney, Australia
1 Jun 2022 → 31 May 2027

Associated Investigator, The Australian Research Council Centre of Excellence for Transformative Meta-Optical Systems

1 Jan 2022 → 31 Dec 2023

Prizes

2016 Chinese Government Prize for Outstanding Self-financed Students Abroad
Ren, Haoran (Recipient), 2016

Candidate Award for the 2023 Rising Star of Light

Ren, Haoran (Recipient), 2023

Humboldt Research Fellowship

Ren, Haoran (Recipient), 2019

Macquarie University Research Fellowship

Ren, Haoran (Recipient), 2020

OSA Robert S. Hilbert Student Travel Grant

Ren, Haoran (Recipient), 2015

The Geoff Opat Early Career Researcher Prize

Ren, Haoran (Recipient), 2022

Victoria Fellowship

Ren, Haoran (Recipient), 1 Oct 2018

Projects**3D meta fibre optics for advanced imaging**

Ren, H.

1/06/22 → 10/12/25

All-on-chip twisted light modulator for ultrahigh-capacity data processing

Ren, H., Maier, S., Dawes, J. M. & Omatsu, T.

10/11/22 → 9/11/25

Activities**Workshop on 3D Printing of Photonics Materials**

Haoran Ren (Organiser)

11 Dec 2022

Optics Express (Journal)

Haoran Ren (Editor in chief)

9 Sept 2022

APL Photonics (Journal)

Haoran Ren (Editorial board member)

2022 → ...

Australia and New Zealand Conference on Optics and Photonics

Haoran Ren (Organiser)

2021

Light: Science and Applications (Journal)

Haoran Ren (Peer reviewer)

2020 → ...

Nature Photonics (Journal)

Haoran Ren (Peer reviewer)

2020 → ...

Optica (Journal)

Haoran Ren (Peer reviewer)
2020 → ...

Science Advances (Journal)

Haoran Ren (Peer reviewer)
2020 → ...

ACS Photonics (Journal)

Haoran Ren (Peer reviewer)
2019 → ...

Communications Physics (Journal)

Haoran Ren (Peer reviewer)
2019 → ...

Nano Letters (Journal)

Haoran Ren (Peer reviewer)
2019 → ...

Nature Electronics (Journal)

Haoran Ren (Peer reviewer)
2019 → ...

Nature (Journal)

Haoran Ren (Peer reviewer)
2018 → ...

Nature Communications (Journal)

Haoran Ren (Peer reviewer)
2018 → ...

Research outputs**Metafiber transforming arbitrarily structured light**

Li, C., Wieduwilt, T., Wendisch, F. J., Márquez, A., Menezes, L. D. S., Maier, S. A., Schmidt, M. A. & Ren, H., Dec 2023, In: Nature Communications. 14, 1, 10 p., 7222.

Nanophotonic Materials for Twisted-Light Manipulation

Ren, H. & Maier, S. A., Aug 2023, In: Advanced Materials. 35, 34, 16 p., 2106692.

Disorder-Induced Topological State Transition in the Optical Skyrmion Family

Liu, C., Zhang, S., Maier, S. A. & Ren, H., 23 Dec 2022, In: Physical Review Letters. 129, 26, 7 p., 267401.

Plasmonic bound states in the continuum to tailor light-matter coupling

Aigner, A., Tittl, A., Wang, J., Weber, T., Kivshar, Y., Maier, S. A. & Ren, H., 7 Dec 2022, In: Science Advances. 8, 49, 8 p., eadd4816.

Radial bound states in the continuum for polarization-invariant nanophotonics

Kühner, L., Sortino, L., Berté, R., Wang, J., Ren, H., Maier, S. A., Kivshar, Y. & Tittl, A., Dec 2022, In: Nature Communications. 13, 1, 8 p., 4992.

Near-Field Retrieval of the Surface Phonon Polariton Dispersion in Free-Standing Silicon Carbide Thin Films

Mancini, A., Nan, L., Wendisch, F. J., Berté, R., Ren, H., Cortés, E. & Maier, S. A., 16 Nov 2022, In: ACS Photonics. 9, 11, p. 3696-3704 9 p.

Metasurface Measuring Twisted Light in Turbulence

Dinter, T., Li, C., Kühner, L., Weber, T., Tittl, A., Maier, S. A., Dawes, J. M. & Ren, H., 21 Sept 2022, In: ACS Photonics. 9, 9, p. 3043-3051 9 p.

Strong Polarization Dependent Nonlinear Excitation of a Perovskite Nanocrystal Monolayer on a Chiral Dielectric Nanoantenna Array

Vinçon, I., Wendisch, F. J., De Gregorio, D., Pritzl, S. D., Akkerman, Q. A., Ren, H., De S. Menezes, L., Maier, S. A. & Feldmann, J., 17 Aug 2022, In: ACS Photonics. 9, 11, p. 3506–3514 9 p.

An achromatic metafiber for focusing and imaging across the entire telecommunication range

Ren, H., Jang, J., Li, C., Aigner, A., Plidschun, M., Kim, J., Rho, J., Schmidt, M. A. & Maier, S. A., 19 Jul 2022, In: Nature Communications. 13, 1, 10 p., 4183.

Optical Metasurfaces for Energy Conversion

Cortés, E., Wendisch, F. J., Sortino, L., Mancini, A., Ezendam, S., Saris, S., De S. Menezes, L., Tittl, A., Ren, H. & Maier, S. A., 21 Jun 2022, In: Chemical Reviews. 122, 19, p. 15082–15176 95 p.

Vectorial wavefront holography based on a polarisation-insensitive hologram

Ren, H., Jun 2022, In: Journal of Optics. 24, 6, 7 p., 064008.

Nanophotonic manipulation of optical angular momentum for high-dimensional information optics

Fang, X., Ren, H., Li, K., Luan, H., Hua, Y., Zhang, Q., Chen, X. & Gu, M., 31 Dec 2021, In: Advances in Optics and Photonics. 13, 4, p. 772-833 62 p.

Ultrahigh numerical aperture meta-fibre for flexible optical trapping

Plidschun, M., Ren, H., Kim, J., Förster, R., Maier, S. A. & Schmidt, M. A., Dec 2021, In: Light: Science and Applications. 10, 1, 11 p., 57.

Orbital-Angular-Momentum-Controlled Hybrid Nanowire Circuit

Ren, H., Wang, X., Li, C., He, C., Wang, Y., Pan, A. & Maier, S. A., 28 Jul 2021, In: Nano Letters. 21, 14, p. 6220-6227 8 p.

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Li, C. H., Maier, S. A. & Ren, H. R., Jul 2021, In: Chinese Optics. 14, 4, p. 792-811 20 p.

Self-Constructed Multiple Plasmonic Hotspots on an Individual Fractal to Amplify Broadband Hot Electron Generation

Wang, X., Liu, C., Gao, C., Yao, K., Masouleh, S. S. M., Berté, R., Ren, H., Menezes, L. D. S., Cortés, E., Bicket, I. C., Wang, H., Li, N., Zhang, Z., Li, M., Xie, W., Yu, Y., Fang, Y., Zhang, S., Xu, H., Vomiero, A., & 4 others Liu, Y., Botton, G. A., Maier, S. A. & Liang, H., 22 Jun 2021, In: ACS Nano. 15, 6, p. 10553-10564 12 p.

Nanointerferometric Discrimination of the Spin-Orbit Hall Effect

Zhang, M., Ren, H., Ouyang, X., Jiang, M., Lu, Y., Hu, Y., Fu, S., Li, Z., Chen, Z., Guan, B. O., Cao, Y. & Li, X., 21 Apr 2021, In: ACS Photonics. 8, 4, p. 1169-1174 6 p.

Optically Tunable Mie Resonance VO₂ Nanoantennas for Metasurfaces in the Visible

Kepič, P., Ligmajer, F., Hrtoň, M., Reñ, H., Menezes, L. D. S., Maier, S. A. & Šikola, T., 21 Apr 2021, In: ACS Photonics. 8, 4, p. 1048-1057 10 p.

Topological-insulator-based gap-surface plasmon metasurfaces

Aigner, A., Maier, S. A. & Ren, H., Feb 2021, In: Photonics. 8, 2, 14 p., 40.

Complex-amplitude metasurface-based orbital angular momentum holography in momentum space

Ren, H., Fang, X., Jang, J., Bürger, J., Rho, J. & Maier, S. A., 1 Nov 2020, In: *Nature Nanotechnology*. 15, 11, p. 948-955 8 p.

Three-dimensional vectorial holography based on machine learning inverse design

Ren, H., Shao, W., Li, Y., Salim, F. & Gu, M., 17 Apr 2020, In: *Science Advances*. 6, 16, 7 p., eaaz4261.

Orbital angular momentum holography for high-security encryption

Fang, X., Ren, H. & Gu, M., 1 Feb 2020, In: *Nature Photonics*. 14, 2, p. 102-108 7 p.

Metasurface-integrated vertical cavity surface-emitting lasers for programmable directional lasing emissions

Xie, Y. Y., Ni, P. N., Wang, Q. H., Kan, Q., Briere, G., Chen, P. P., Zhao, Z. Z., Delga, A., Ren, H-R., Chen, H. D., Xu, C. & Genevet, P., Feb 2020, In: *Nature Nanotechnology*. 15, 2, p. 125-130 6 p.

Metasurface orbital angular momentum holography

Ren, H., Briere, G., Fang, X., Ni, P., Sawant, R., Héron, S., Chenot, S., Vézian, S., Damilano, B., Brändli, V., Maier, S. A. & Genevet, P., 1 Dec 2019, In: *Nature Communications*. 10, 1, 8 p., 2986.

Angular-momentum nanometrology in an ultrathin plasmonic topological insulator film

Yue, Z., Ren, H., Wei, S., Lin, J. & Gu, M., 24 Oct 2018, In: *Nature Communications*. 9, 1, 7 p., 4413.

Angular Momentum-Reversible Near-Unity Bisignate Circular Dichroism

Ren, H. & Gu, M., May 2018, In: *Laser & Photonics Reviews*. 12, 5, 6 p., 1700255.

On-chip noninterference angular momentum multiplexing of broadband light

Ren, H., Li, X., Zhang, Q. & Gu, M., 13 May 2016, In: *Science*. 352, 6287, p. 805-809 5 p.

Athermally photoreduced graphene oxides for three-dimensional holographic images

Li, X., Ren, H., Chen, X., Liu, J., Li, Q., Li, C., Xue, G., Jia, J., Cao, L., Sahu, A., Hu, B., Wang, Y., Jin, G. & Gu, M., 22 Apr 2015, In: *Nature Communications*. 6, 6984.

Catenary optics for achromatic generation of perfect optical angular momentum

Pu, M., Li, X., Ma, X., Wang, Y., Zhao, Z., Wang, C., Hu, C., Gao, P., Huang, C., Ren, H., Li, X., Qin, F., Yang, J., Gu, M., Hong, M. & Luo, X., 2015, In: *Science Advances*. 1, 9, 1500396.

Polarization-Multiplexed multifocal arrays by a π -phase-stepmodulated azimuthally polarized beam

Ren, H., Li, X. & Gu, M., 15 Dec 2014, In: *Optics Letters*. 39, 24, p. 6771-6774 4 p.

Super-resolved pure-transverse focal fields with an enhanced energy density through focus of an azimuthally polarized first-order vortex beam

Li, X., Venugopalan, P., Ren, H., Hong, M. & Gu, M., 15 Oct 2014, In: *Optics Letters*. 39, 20, p. 5961-5964 4 p.

Three-dimensional parallel recording with a Debye diffraction-limited and aberration-free volumetric multifocal array

Ren, H., Lin, H., Li, X. & Gu, M., 15 Mar 2014, In: *Optics Letters*. 39, 6, p. 1621-1624 4 p.

A parametric model of estimating sea state bias based on JASON-1 altimetry

Li, S. G., Wang, Y. H., Miao, H. L., Zhou, X. G., Ren, H. R., Wang, G. Z. & Zhang, J., Apr 2013, In: *Zhongguo Shiyou Daxue Xuebao (Ziran Kexue Ban)/Journal of China University of Petroleum (Edition of Natural Science)*. 37, 2, p. 181-185+196 6 p.

Study on energy transfer of supercapacitor in photovoltaic illumination

Miao, H., Tian, Q., Ren, H. & Wei, S., Aug 2012, In: *Bandaoti Guangdian/Semiconductor Optoelectronics*. 33, 4, p. 607-610 4 p.

Study on altimeter-based inversion model of mean wave period

Miao, H., Ren, H., Zhou, X., Wang, G. & Zhang, J., Jan 2012, In: Journal of Applied Remote Sensing. 6, 1, 8 p., 63591.

Study on empirical model in junction-temperature measurement of LED

Miao, H., Zhou, X., Zhou, C., Haoran, R. & Tian, Q., Jun 2011, In: Guangxue Xuebao/Acta Optica Sinica. 31, SUPPL.1, 6 p., s100313.