

GUOHUA HU

Curriculum Vitae

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In brief

I am currently an Assistant Professor at the Department of Electronic Engineering, The Chinese University of Hong Kong (CUHK). The research focus of my group is solution processing of low-dimensional materials and exploring their broad applications in printed electronics.

Education

University of Cambridge, Cambridge, UK 10/2013-09/2017

PhD (03/2018), Electrical Division, Department of Engineering; St John's College

Thesis: Printable 2d Material Optoelectronics and Photonics

Supervisor: Prof Tawfique Hasan

University of Electronic Science and Technology of China, Chengdu, China 09/2009-07/2013

BEng (07/2013), Solid-state electronics, School of microelectronics and solid-state electronics

GPA: 3.85/4, Weighted average: 90/100

Thesis: Fabrication of graphene field-effect transistors

Academic positions

The Chinese University of Hong Kong, Hong Kong SAR, China

Assistant Professor, Department of Electronic Engineering 06/2019-

University of Cambridge, Cambridge, UK

Research Assistant/Associate, Cambridge Graphene Centre 09/2017-01/2019

Newton Fund Project: Printed Electronic Sensors for Urban Monitoring Applications in China

St John's College postdoc researcher 12/2017-01/2019

Grants secured

1. UGC/ECS 24200521, PI, 01/2022-12/2024, HKD 690,067
2. CUHK/SHIAE RNE-p3-21, PI, 08/2021-07/2023, HKD 732,000
3. CHUK/Direct Grant 4055115, PI, 06/2019-06/2021, HKD 150,000
4. CHUK/Start-up, PI, 06/2019-06/2022

Course instruction

ESTR1003 Engineering Physics (Elite Stream)	2020-
ELEG4311 Physics and Technology of Semiconductor Devices	2019-
ELEG5753 Flexible Electronics and Solar Cell Technology	2019-
GENA1113 Student-oriented Teaching and Seminar (New Asia College)	2020/2021
EEEN4020 Solar Energy and Photovoltaic Technology	2019/2020
Part IB Integrated Electrical Project Demonstration (Cambridge)	2013/2014

Student supervision

Graduate students

1. Songwei Liu, PhD student, 2020-
2. Lekai Song, PhD student, 2020-
3. Jingfang Pei, PhD student, 2021-
4. Yang Liu, PhD student, 2021-
5. Pengyu Liu, PhD student, 2021-
6. Ao Shen, MSc student, 2021/2022

Undergraduate final-year project students (5 students, 2020-)

EPSRC Graphene CDT MRes students (Cambridge, 5 students, 2014-2018)

Part IIB MEng students (Cambridge, 2 students, 2014-2016)

Services

Administrative services

New Asia College Coordinator for EE Department	08/2020-
EE Safety Committee, Chairman	08/2020-
EE Space Committee	08/2020-
EE Staff-Student Consultative Committee	08/2020-
EE Seminar & Visitor Principal-in-charge	08/2020-
EE Department Admission Committee	08/2019-
EE Publicity Committee, Vice-Chairman	08/2019-
EE Safety Committee, Vice-Chairman	08/2019-07/2020
EE Staff-Student Consultative Committee, Vice-Chairman	08/2019-07/2020
Engineering Faculty Discipline Committee	08/2019-07/2020

Academic services

1. Reviewer for peer-referred journals, including Nano Letters, Advanced Materials, Advanced Functional Materials, Advanced Materials Technologies, Scientific Reports, Sensors, etc.
2. Reviewer for research grant committees, including The French National Research Agency, University of Macao, etc.

Publications (citations >2,600, h-index 24; [Google Scholar](#), as of 11/2021)

Book

1. L. W. T. Ng, G. Hu, R. C. T. Howe, X. Zhu, Z. Yang, C. Jones and T. Hasan, Functional inks and printing of graphene and related 2D materials: Technology, formulation and applications, Springer, New York, USA (2018).

Patent

1. G. Hu, R. C. T. Howe, Z. Yang, L. Ng, C. Jones, K. Stone and T. Hasan, Nanoplatelet dispersions, methods for their production and uses thereof, WO2017013263A1 (2015).

Peer-referred papers

1. G. Hu*, L. Yang*, Z. Yang, Y. Wang, X. Jin, J. Dai, Q. Wu, S. Liu, X. Zhu, X. Wang, T.-C. Wu, R. C. T. Howe, T. Albrow-Owen, L. W. T. Ng, Q. Yang, L. G. Occhipinti, R. I. Woodward, E. J. R.

- Kelleher, Z. Sun, X. Huang, M. Zhang, C. D. Bain, T. Hasan, A general ink formulation of 2d crystals for wafer-scale inkjet printing, *Science Advances* 6, eaba5029 (2020).
2. Q Zhang, X Jin, G Hu, M Zhang, Z Zheng, T Hasan, Sub-150 fs dispersion-managed soliton generation from an all-fiber Tm-doped laser with BP-SA, *Optics Express* 28, 34104-34110 (2020).
 3. T.-C. Wu, J. Dai, G. Hu, W. Yu, O. Ogbeide, A. De Luca, X. Huang, B. Su, Y. Li, F. Udrea, T. Hasan, Machine-intelligent inkjet-printed α -Fe₂O₃/rGO towards NO₂ detection in ambient humidity, *Sensors and Actuators: B. Chemical*, 128446 (2020).
 4. X. Zhu, L. W. T. Ng, G. Hu, T.-C. Wu, D.-S. Um, N. Macadam, T. Hasan, Hexagonal boron nitride-enhanced optically transparent polymer dielectric inks for printable electronics, *Advanced Functional Materials*, 202002339 (2020).
 5. X. Jin, M. Zhang, G. Hu, Q. Wu, Z. Zheng, T. Hasan, Broad bandwidth dual-wavelength fiber laser simultaneously delivering stretched pulse and dissipative soliton, *Optical Express* 28, 5 (2020).
 6. X. Jin, G. Hu, M. Zhang, T. Albrow-Owen, Z. Zheng, T. Hasan, Environmentally stable black phosphorus saturable absorber for ultrafast laser, *Nanophotonics*, 2019-0524 (2020).
 7. T.-C. Wu, A. De Luca, Q. Zhong, X. Zhu, O. Ogbeide, D.-S. Um, G. Hu, T. Albrow-Owen, F. Udrea, T. Hasan, Inkjet-printed CMOS-integrated graphene–metal oxide sensors for breath analysis, *npj 2D Materials and Applications* 3, 42 (2019).
 8. X. Feng, Y. Li, L. Wang, S. Chen, Z. G. Yu, W. C. Tan, N. Macadam, G. Hu, L. Huang, L. Chen, X. Gong, D. Chi, T. Hasan, A. V.-Y. Thean, Y.-W. Zhang, K.-W. Ang, A fully printed flexible MoS₂ memristive artificial synapse with femtojoule switching energy, *Advanced Electronic Materials* 5, 1900740 (2019).
 9. L. W. T. Ng, X. Zhu, G. Hu, N. Macadam, D. Um, T. -C. Wu, F. L. Moal, C. Jones and T. Hasan, Conformal printing of graphene for single and multi-layered devices on to arbitrarily shaped 3D surfaces, *Advanced Functional Materials*, 1807933 (2019)
 10. R. I. Woodward, M. R. Majewski, N. Macadam, G. Hu, T. Albrow-Owen, T. Hasan and S. D. Jackson, Q-switched Dy:ZBLAN fiber lasers beyond 3 μ m: comparison of pulse generation using acousto-optic modulation and inkjet-printed black phosphorus, *Optics Express* 27, 15032-15045 (2019)
 11. X. Jin*, G. Hu*, M. Zhang, Y. Hu, T. Albrow-Owen, R. C. T. Howe, T.-C. Wu, Q. Wu, Z. Zheng and T. Hasan, 102 fs pulse generation from a long-term stable, inkjet-printed black phosphorus-mode-locked fiber laser, *Optics Express* 26, 12506-12513 (2018).
 12. G. Hu, J. Kang, L. W. T. Ng, X. Zhu, R. C. T. Howe, M. Hersam and T. Hasan, Functional inks and printing of two-dimensional materials, *Chemical Society Reviews* 47, 3265-3300 (2018).
 13. X. Wang, Z. Wang, J. Zhang, X. Wang, Z. Zhang, J. Wang, Z. Zhu, Z. Li, Y. Liu, X. Hu, J. Qiu, G. Hu, B. Chen, N. Wang, Q. He, J. Chen, J. Yan, W. Zhang, T. Hasan, S. Li, H. Li, H. Zhang, Q. Wang, X. Huang and W. Huang, Realization of vertical metal/semiconductor heterostructures via solution-phase epitaxy, *Nature Communications* 9, 3611 (2018).
 14. T. Juntunen, H. Jussila, M. Ruoho, S. Liu, G. Hu, T. Albrow-Owen, L. W. T. Ng, R. C. T. Howe, T. Hasan, Z. Sun and I. Tittonen, Inkjet printed large-area flexible graphene thermoelectric *Advanced Functional Materials*, 1800480 (2018).
 15. D. Li, H. Jussila, Y. Wang, G. Hu, T. Albrow-Owen, R. C. T. Howe, Z. Ren, J. Bai, T. Hasan and Z. Sun, Wavelength and pulse duration tunable ultrafast fiber laser mode-locked with carbon nanotubes, *Scientific Reports* 8, 2738 (2018).
 16. G. Hu, T. Albrow-Owen, X. Jin, A. Ali, Y. Hu, R. C. T. Howe, K. Shehzad, Z. Yang, X. Zhu, R. I. Woodward, T.-C. Wu, H. Jussila, J.-B., P. Peng, P. Tan, Z. Sun, E. J. R. Kelleher, M. Zhang, Y. Xu and T. Hasan, Black phosphorus ink formulation for inkjet printing of optoelectronics and photonics, *Nature Communications* 8, 278 (2017).

17. J. Wang, S. Lin, X. Liang, M. Wang, P. Yan, G. Hu, T. Albrow-Owen, S. Ruan, Z. Sun and T. Hasan, High-energy and efficient Raman soliton generation tunable from 1.98 to 2.29 μm in an all-silica-fiber thulium laser system, *Optics Letters* 42, 3518-3521 (2017).
18. H. Jussila, T. Albrow-Owen, H. Yang, G. Hu, S. Aksimsek, N. Granqvist, H. Lipsanen, R. C. T. Howe, Z. Sun and T. Hasan, New approach for thickness determination of solution-deposited graphene thin films, *ACS Omega* 2, 2630 (2017).
19. M. Chernysheva, A. Bednyakova, M. Al Aرامي, R. C. T. Howe, G. Hu, T. Hasan, A. Gambetta, G. Galzerano, M. Rümmele and A. Rozhin, Double-wall carbon nanotube hybrid mode-locker in Tm-doped fibre laser: A novel mechanism for robust bound-state solitons generation, *Scientific Reports* 7, 44314 (2017).
20. D. Dodoo-Arhin, R. C. T. Howe, G. Hu, P. Hiralal, G. Amaratunga, A. Bello, Y. Xua and T. Hasan, Inkjet-printed graphene electrodes for dye-sensitized solar cells, *Carbon* 105, 33-41(2016).
21. J. Wang, X. Liang, G. Hu, Z. Zheng, S. Lin, D. Ouyang, X. Wu, P. Yan, S. Ruan, Z. Sun and T. Hasan, 152 fs nanotube-mode-locked thulium-doped all-fiber laser, *Scientific Reports* 6, 28885 (2016).
22. S. Xu, F. Wang, C. Zhu, Y. Meng, Y. Liu, W. Liu, J. Tang, K. Liu, G. Hu, R. C. T. Howe, T. Hasan, R. Zhang, Y. Shi, Y. Xu, Ultrafast nonlinear photoresponse of single-wall carbon nanotubes: A broadband degenerate investigation, *Nanoscale* 8, 9304-9309 (2016).
23. R. C. T. Howe, R. I. Woodward, G. Hu, Z. Yang, E. J. R. Kelleher and T. Hasan, Surfactant-aided exfoliation of molybdenum disulphide for ultrafast pulse generation through edge-state saturable absorption, *Physica Status Solidi (B)* 5, 911–917 (2016).
24. R. C. T. Howe, G. Hu, Z. Yang, T. Hasan, Functional inks of graphene, metal dichalcogenides and black phosphorus for photonics and (opto) electronics, *SPIE 95530R, Nanoscience + Engineering* (2015).
25. S. Santra*, G. Hu*, R. C. T. Howe, A. D. Luca, S. Z. Ali, S. K. Ray, F. Udrea, J. W. Gardner, P. K. Guha and T. Hasan, CMOS integration of graphene for humidity sensing, *Scientific Reports* 5, 17374 (2015).
26. M. Zhang*, G. Hu*, G. Hu, R. C. T. Howe, L. Chen, Z. Zheng and T. Hasan, Yb- and Er-doped fiber laser Q-switched with a broadband WS₂ saturable absorber, *Scientific Reports* 5, 17482 (2015).
27. R. I. Woodward, R. C. T. Howe, G. Hu, F. Torrisi, M. Zhang, T. Hasan and E. J. R. Kelleher, Few-layer MoS₂ saturable absorbers for short-pulse laser technology: Current status and future perspectives (invited paper), *Photonics Research* 3, A30-A42 (2015).
“Editor-in-Chief Choice” Award in 2015
28. R. I. Woodward, R. C. T. Howe, T. H. Runcorn, G. Hu, F. Torrisi, E. J. R. Kelleher and T. Hasan, Wideband saturable absorption in few-layer molybdenum diselenide (MoSe₂) for Q-switching Yb-, Er- and Tm-doped fiber lasers, *Optics Express* 23, 20051-20061 (2015).
29. M. Zhang, R. C. T. Howe, R. I. Woodward, E. J. R. Kelleher, F. Torrisi, G. Hu, S. V. Popov, J. R. Taylor and T. Hasan, Solution processed MoS₂-PVA composite for sub-bandgap mode-locking of a wideband tunable ultrafast er: fiber laser, *Nano Research* 8, 1522-1534 (2015).
Best Paper Award in 2017
30. R. I. Woodward, E. J. R. Kelleher, R. C. T. Howe, G. Hu, F. Torrisi, T. Hasan, S. V. Popov and J. R. Taylor, Tunable Q-switched fiber laser based on saturable edge-state absorption in few-layer molybdenum disulfide (MoS₂), *Optics Express* 22, 31113-31122 (2014).

Talks and conference presentations

1. G. Hu, T.-C. Wu, J. Dai, L. W. T. Ng, X. Zhu, X. Huang, T. Hasan, Functional inkjet printing inks of graphene/metal oxide for gas sensors, NT18, Beijing, China (2018).

2. G. Hu, T. Hasan, Using solvents for composites, functional inks and soft lithography patterns of 2D materials, NPO Conference, Sochi, Russia (2017).
3. G. Hu, R. C. T. Howe, Z. Yang, T. Albrow-Owen, M. Zhang, T. Hasan, Inkjet printing of treatment free, highly uniform functional TMD inks on versatile substrates, 2016 MRS Fall Meeting, Boston, USA (2016).
4. G. Hu, Z. Yang, T. Albrow-Owen, R. C. T. Howe, M. Zhang, T. Hasan, Inkjet printing of black phosphorus, 2016 MRS Fall Meeting, Boston, USA (2016).
5. G. Hu, R. C. T. Howe, Z. Yang, T. Hasan, Low temperature processable, functional inks of TMDs for inkjet printing, IoP Printing and Graphics Science Student Conference, London, UK (2016).
6. G. Hu, R. C. T. Howe, Z. Yang, T. Hasan, Low temperature inks of 2-dimensional crystals for inkjet printing, International Winterschool on Electronic Properties of Novel Materials, Kirchberg in Tirol, Austria (2015).

Conference proceedings

1. X. Lian, G. Hu, X. Jin, M. Zhang, Q. Zhang, Z. Zheng, T. Hasan, Dual-band synchronization of fiber lasers through a common black phosphorus saturable absorber, Conference on Lasers and Electro-Optics (CLEO), 1-2, (2020).
2. X. Feng, Y. Li, L. Wang, Z. Yu, S. Chen, W.-C. Tan, N. Macadam, G. Hu, X. Gong, T. Hasan, Y.-W. Zhang, A. V.-Y. Thean, K.-W. Ang, First demonstration of a fully-printed MoS_2 Rram on flexible substrate with ultra-low switching voltage and its application as electronic synapse, Symposium on VLSI Technology, T88-T89 (2019).
3. X. Jin, G. Hu, M. Zhang, Y. Hu, Q. Wu, T. Albrow-Owen, R. C. T. Howe, T-C. Wu, Z. Zheng, T. Hasan, Stable, inkjet printed temperature-and humidity-resistant black phosphorus for ultrafast lasers, CLEO: Science and Innovations, JTh2A. 82 (2018).
4. Y. Hu, X. Jin, G. Hu, M. Zhang, Q. Wu, Z. Zheng, T. Hasan, Hybrid mode-locked erbium-doped fiber laser with black phosphorus saturable absorber, CLEO: Science and Innovations, SF3I. 4 (2018).
5. Q. Wu, G. Hu, M. Zhang, X. Jin, Y. Hu, T. Li, T. Albrow-Owen, R. C. T. Howe, T-C. Wu, Z. Zheng, T. Hasan, Inkjet-printed optically uniform transition metal dichalcogenide saturable absorbers, CLEO: QELS_Fundamental Science, JTh2A. 83 (2018).
6. X. Jin, G. Hu, M. Zhang, Y. Hu, Q. Wu, T. Albrow-Owen, R. C. T. Howe, T-C. Wu, Z. Zheng, T. Hasan, Ultrafast dispersion-managed fiber laser mode-locked by black phosphorus saturable absorber, CLEO: Science and Innovations, SF3K. 2 (2018).
7. X. Jin, G. Hu, M. Zhang, Y. Hu, T. Albrow-Owen, R. C. T. Howe, T-C. Wu, X. Zhu, Z. Zheng, T. Hasan, Long term stable black phosphorus saturable absorber for mode-locked fiber laser, CLEO, SW4K.1 (2017).
8. G. Hu, M. Zhang, L. Chen, X. Zhu, G. Hu, R. C. T. Howe, X. Zhao, Z. Zheng, T. Hasan, Q-switched pulse generation in Yb- and Er-doped fiber laser with WS_2 saturable absorber, CLEO, FM3G.5 (2015).
9. G. Hu, M. Zhang, L. Chen, X. Zhu, G. Hu, R. C. T. Howe, X. Zhao, Z. Zheng, T. Hasan, Q-switched Yb-doped fiber laser with WS_2 saturable absorber, CLEO-PR, 25A3_4 (2015).
10. M. Chernysheva, C. Mou, R. C. T. Howe, G. Hu, T. Hasan, S. Turitsyn, A. Rozhin, Soliton molecules generation in DWCNT mode-locked thulium-doped fibre laser, CLEO/Europe, CF_P_6 (2015).