Dr Yuefeng Yin

Level-B Research Fellow · Computational Materials Science & Condensed Matter Physics
Department of Materials Science and Engineering, Monash University, Australia

Monash University
Clayton VIC 3800, Australia
yuefeng.yin@monash.edu
Google Scholar profile

47	1,285	20	9	A$3.4M
PEER-REVIEWED JOURNAL ARTICLES	CITATIONS (GOOGLE SCHOLAR)	H-INDEX	PHD CANDIDATES MENTORED	RESEARCH FUNDING INVOLVED

Computational materials scientist (PhD, Materials Science and Engineering, Monash University, 2016) with more than nine years of postdoctoral research at Monash University. My work uses **first-principles (density functional theory), tight-binding and quantum-transport modelling** to understand and design the electronic properties of **low-dimensional and topological materials for low-energy electronics**, working closely with experimental physicists and with industry. I currently manage the modelling program of a collaborative research program between Monash University and the Australian start-up **TQ Transistors** and its American subsidiary. I have published **47 peer-reviewed journal articles** (plus one IEEE IEDM proceedings paper), including in *Nature Communications*, *Advanced Materials*, *ACS Nano*, *Nano Letters*, *Matter* and *npj Quantum Materials*, and I am lead inventor on a US patent application.

EMPLOYMENT HISTORY

Oct 2024 – Current	**Level-B Research Fellow**, Monash University, Australia. *Description of work:* Managing the modelling program and conduct computational modelling on novel two-dimensional electronic materials in a collaborative program between Monash University and TQ Transistors.
May 2017 – Aug 2024	**Postdoctoral Research Fellow**, Monash University, Australia. *Description of work:* Working in Australian Research Council (ARC) Center of Excellence in Future Low-Energy Electronic Technologies (FLEET) to investigate electronic properties of low-dimensional nanomaterials using computational modelling.
March 2017 – April 2017 May 2018 – June 2018 June 2023 – July 2023 June 2024	**Visiting Scholar**, Central South University, China. *Description of work:* Teach an undergraduate course on computational materials science as a part of collaboration program between Monash University (Australia) and Central South University (China).
January 2016 – December 2016	**Research Assistant**, Monash University, Australia. *Description of work:* research on properties of hydrogels using Monte Carlo Simulations.

EDUCATION

March 2012 – May 2016	**Doctor of Philosophy (PhD), Materials Science and Engineering**, Monash University, Melbourne, Australia. Thesis: *Tailoring the electronic structure of graphene via molecular adsorption.* Supervisors: Prof. Nikhil V. Medhekar and Dr Jiri Cervenka.
September 2007 – December 2011	**Bachelor of Engineering (B.Eng.), Materials Science and Engineering** (2+2 joint program), Monash University, Melbourne, Australia / Central South University, Changsha, China. Honours thesis: *Molecular dynamics simulation of graphene and related materials.*

RESEARCH EXPERTISE

- **First-principles electronic-structure modelling** — density functional theory (DFT) of 2D materials, interfaces, defects and magnetic thin films.
- **Topological and quantum materials** — Berry curvature, spin texture, edge states, anomalous/nonlinear Hall effects, Wannier-function tight-binding models.
- **Device-level modelling** — band alignment and contacts in van der Waals heterostructures and transistors; quantum transport.
- **Statistical simulation** — Monte Carlo and molecular dynamics simulation of soft and nanostructured materials.
- **High-performance computing** — large-scale calculations on Australian national facilities (NCI, Pawsey Supercomputing Research Centre); extending to AI-accelerated materials discovery.
- **Experiment–theory collaboration** — modelling partner to ARPES, STM, transport, optical and neutron-scattering groups in Australia and internationally (New Zealand, Japan, India, China).

RESEARCH GRANTS & COMPUTING RESOURCES

2026 – 2027 **A$650K**: Lead Chief Investigator, Australia's Economic Accelerator (AEA) Ignite Scheme, Round 2, "*From Lab to Fab: Advancing a New Low-Energy Transistor Towards Large-scale Manufacturing.*" Other CIs: Prof. Michael S. Fuhrer & Prof. Nikhil V. Medhekar; industry partner TQ Transistors.

2026 – Current **A$1.7M**: Key Participant, Australian Research Council (ARC) Linkage Project, 2025 Round 2, "*Prototyping a Breakthrough Low-Energy Topological Transistor for Future Electronics.*" Led by Prof. Michael S. Fuhrer; other CI Prof. Nikhil V. Medhekar; industry partner TQ Transistors.

2024 – Current **A$1.04M**: Co-Chief Investigator, industry funding (TQ Transistors Pty Ltd), "*Materials Design for Novel Negative Capacitance Field Effect Transistors.*" Led by Prof. Nikhil V. Medhekar; other CI Prof. Michael S. Fuhrer.

2024 – Current **2M service units**: Lead CI, NCI Adapter Scheme / NCI–Monash Computational Scheme, "*Exploring new approaches of modeling defects in materials.*"

2025 – 2026 **1.5M CPU hours**: Lead CI, Pawsey Fast Track Scheme, "*Understanding the interfacial interactions for semiconductor–metal/semiconductor contact.*"

2020 – 2023 **A$10,750**: Co-CI (with Dr Simon Granville, Victoria University of Wellington), FLEET–MacDiarmid Collaborative Grant, "*Topological properties of anisotropic Weyl semimetal Co_2MnGa*" — short-term collaborative research visits to New Zealand.

PATENT

- **Lead inventor**, US Patent Application No. **19/814,331**, "*Bilayer Structures for Transistor Channel Layers*".

PUBLICATIONS

47 peer-reviewed journal articles and 1 peer-reviewed conference proceedings paper (2015–2026), listed in full below in reverse chronological order, with complete author lists. My name is shown in **bold**. Citation metrics from Google Scholar.

A. Peer-Reviewed Journal Articles (47)

1. W. Zhao, K. Xing, Q. U. Ain, Q. Zhang, **Y. Yin**, Y. Liu, P. Zhang, D.-C. Qi, M. Shahbazi, F. Tang, Y. Fang, X. Wang, J. Karel. Room temperature giant in-plane anomalous Hall effect in $TbMn_6Sn_6$. *National Science Review* 2026, nwag727 (advance article). doi:10.1093/nsr/nwag727
2. E. Haque, **Y. Yin**, M. T. Edmonds, D. Cortie, N. V. Medhekar. Highly Confined Magnetophononic Polaritons and Electron–Phonon Interactions in Atomically Thin $MnBi_2Te_4$. *ACS Nano* 2026, 20, 29481–29497. doi:10.1021/acsnano.6c06828
3. K. Xing, P. Zhang, Q. Cai, W. Zhao, **Y. Yin**, H. Wen, S. L. Y. Chang, J. Liu, S. Wang, J. Bullock, Y. Chen, M. T. Edmonds, C. Gao, X. Yin, Y. P. Chen, J. Hone, M. S. Fuhrer, M. Dubois, S. Chen, D.-C. Qi, Q. Ou. Robust van der Waals diamond-like dielectric for two-dimensional electronics. *Matter* 2026, 103059. doi:10.1016/j.matt.2026.103059
4. Q. U. Ain, W. Zhao, T. T. Huynh, **Y. Yin**, F. Tang, Y. Fang, J. Yan, J. Jasieniak, T. Petersen, Y. Liu, N. V. Medhekar, J. Karel. Disorder Driven Anisotropic Nonlinear Hall Effect in the Kagome Metal $YbCo_6Ge_6$ at Room Temperature. *Advanced Science* 2026, 13, e77434. doi:10.1002/advs.77434
5. Z. Zhao, **Y. Yin**, J. Gu, M. T. Edmonds, N. V. Medhekar. Flat Bands Induced by Non-Collinear Antiferromagnetism in $CoBi_2Te_4$. *Advanced Science* 2026, 13, e76833. doi:10.1002/advs.76833
6. A. Li, B. Ren, H. Yang, H. M. Gu, B. Y. Zhang, N. V. Medhekar, X. Hu, H. Yu, Y. Cheng, **Y. Yin**, Z. Li, J. Z. Ou. Engineering built-in electric fields through p-n heterojunction construction for enhanced dual-functional water electrolysis in Co_2P/Fe_2P systems. *Journal of Alloys and Compounds* 2026, 1068, 188405. doi:10.1016/j.jallcom.2026.188405
7. L. Chen, **Y. Yin**, T. Lu, H. Ma, S. Zhang, X. Zhang, Z. Chen, S. Lin, S. Huo, S. Xia, R. A. Mole, D. Yu, K. C. Rule, W. Zhao, J. Karel, P. Song, J. Bell, M. Hong. Uncovering complex phonon interactions in $Mg_3Bi_{2-x}Sb_x$: topology and avoided crossings. *Nature Communications* 2026, 17, 5267. doi:10.1038/s41467-026-71754-9
8. K. Xing, Z. Yang, W. Zhao, **Y. Yin**, H. Han, S. Wang, S. Wang, J. Bullock, A. Stacey, J. A. Belcourt, S. Rubanov, H. Yin, D. A. Broadway, J.-P. Tetienne, X. Yin, L. Wu, D.-C. Qi, M. S. Fuhrer, Q. Ou, X. R. Wang. Efficient and Robust p-Type Transistor Based on Ultrawide-Bandgap Semiconductor. *ACS Nano* 2026, 20, 7343–7354. doi:10.1021/acsnano.5c22605
9. J. Wang, Y. Zhang, J. Hu, H. Song, X. Sun, X. Meng, Z. Xu, **Y. Yin**, T. Yang, L. Sheng, J. Chen, S. Liu, P. Li, P. Gao, N. V. Medhekar, D. Yu, S. Granville, H. Yu. Band Structure Engineering to Optimize Spin-Wave Propagation in Weyl ferromagnet $Co_2MnGa_{1-x}Ge_x$. *Advanced Materials* 2025, 37, e05704. doi:10.1002/adma.202505704
10. C. Wang, **Y. Yin**, T. T. Huynh, M. S. Fuhrer, N. V. Medhekar. Edge state stabilization and control in 2D topological crystalline insulators. *Materials Today Physics* 2025, 59, 101897. doi:10.1016/j.mtphys.2025.101897

11. Y. Zhang, J. Sung, **Y. Yin**, Y.-Y. Chang, N. V. Medhekar, S. Granville, H.-S. Hsu. Giant temperature-independent ultraviolet circular dichroism in Co_2MnX (X = Ga, Ge) Heusler magnetic thin films. *Physical Review Applied* 2025, 24, 034052. doi:10.1103/h822-rw47

12. W. Zhao, K. Xing, Y. Zhao, L. Chen, M. Hong, **Y. Yin**, Y. Liu, D. K. Le, J. Gayles, F. Tang, Y. Fang, B. Yan, J. Karel. Room temperature quantum metric effect in $TbMn_6Sn_6$. *Nature Communications* 2025, 16, 6837. doi:10.1038/s41467-025-62096-z

13. W. Zhao, Y. Zhang, **Y. Yin**, K. Xing, S. Zhou, A. Bake, G. Akhgar, D. Cortie, L. Chen, X. Wang, K. C. Rule, N. V. Medhekar, S. Granville, J. Karel. Giant Berry curvature in amorphous ferromagnet Co_2MnGa. *Matter* 2025, 8, 101988. doi:10.1016/j.matt.2025.101988

14. K. Xing, D. McEwen, **Y. Yin**, W. Zhao, A. Bake, D. Cortie, J. Liu, T.-H.-Y. Vu, Y.-H. Chen, J. Hone, A. Stacey, M. T. Edmonds, N. V. Medhekar, K. Watanabe, T. Taniguchi, Q. Ou, D.-C. Qi, M. S. Fuhrer. Pick-and-Place Transfer of Arbitrary-Metal Electrodes for van der Waals Device Fabrication. *ACS Nano* 2025, 19, 3579–3588. doi:10.1021/acsnano.4c13592

15. Z. Liu, B. Liu, **Y. Yin**, N. V. Medhekar. Generic Approach to Intrinsic Magnetic Second-Order Topological Insulators via Inverted p–d Orbitals. *Nano Letters* 2024, 24, 11295–11301. doi:10.1021/acs.nanolett.4c03109

16. A. Varghese, A. H. Pandey, P. Sharma, **Y. Yin**, N. V. Medhekar, S. Lodha. Electrically Controlled High Sensitivity Strain Modulation in MoS_2 Field-Effect Transistors via a Piezoelectric Thin Film on Silicon Substrates. *Nano Letters* 2024, 24, 8472–8480. doi:10.1021/acs.nanolett.4c00357

17. E. Haque, **Y. Yin**, N. V. Medhekar. Electron–phonon interactions at the topological edge states in single bilayer Bi (111). *Nanoscale* 2024, 16, 17442–17451. doi:10.1039/d4nr02172j

18. Y. Hong, J. Deng, Q. Kong, **Y. Yin**, X. Ding, J. Sun, J. Z. Liu. Origin of Different Piezoelectric Responses in Elemental Sb and Bi Monolayers. *Physical Review B* 2024, 109, 035204. doi:10.1103/physrevb.109.035204

19. A. Grubišić-Čabo, J. C. Kotsakidis, **Y. Yin**, A. Tadich, M. Haldon, S. Solari, J. Riley, E. Huwald, K. M. Daniels, R. L. Myers-Ward, M. T. Edmonds, N. V. Medhekar, D. K. Gaskill, M. S. Fuhrer. Quasi-free-standing AA-stacked Bilayer Graphene Induced by Calcium Intercalation of the Graphene-Silicon Carbide Interface. *Frontiers in Nanotechnology* 2024, 5, 1333127. doi:10.3389/fnano.2023.1333127

20. B. Mallett, Y. Zhang, C. Pot, K. Van Koughnet, B. Stanley, R. G. Buckley, A. Koo, **Y. Yin**, N. V. Medhekar, S. Granville. Using Optical Spectroscopy to Probe the Impact of Atomic Disorder on the Heusler Alloy Co_2MnGa. *Physical Review Materials* 2023, 7, 094203. doi:10.1103/physrevmaterials.7.094203

21. **Y. Yin**, C. Wang, M. S. Fuhrer, N. V. Medhekar. Extracting Unconventional Spin Texture in Two Dimensional Topological Crystalline Insulator Bismuthene via Tuning Bulk-Edge Interactions. *Materials Today Physics* 2023, 36, 101168. doi:10.1016/j.mtphys.2023.101168

22. M. Aoki, **Y. Yin**, S. Granville, Y. Zhang, N. V. Medhekar, L. Leiva, R. Ohshima, Y. Ando, M. Shiraishi. Gigantic Anisotropy of Self-Induced Spin-Orbit Torque in Weyl Ferromagnet Co_2MnGa. *Nano Letters* 2023, 23, 6951–6957. doi:10.1021/acs.nanolett.3c01573

23. L. Tang, Z. Mao, C. Wang, Q. Fu, C. Wang, Y. Zhang, J. Shen, **Y. Yin**, B. Shen, D. Tan, Q. Li, Y. Wang, N. V. Medhekar, J. Wu, H. Yuan, Y. Li, M. S. Fuhrer, C. Zheng. Giant Piezoresistivity in a van der Waals Material Induced by Intralayer Atomic Motions. *Nature Communications* 2023, 14, 1519. doi:10.1038/s41467-023-37239-9

24. H. Jawa, A. Varghese, S. Ghosh, S. Sahoo, **Y. Yin**, N. V. Medhekar, S. Lodha. Wavelength-Controlled Photocurrent Polarity Switching in BP-MoS_2 Heterostructure. *Advanced Functional Materials* 2022, 32, 2112696. doi:10.1002/adfm.202112696

25. A. Varghese, **Y. Yin**, M. Wang, S. Lodha, N. V. Medhekar. Near-Infrared and Visible-Range Optoelectronics in 2D Hybrid Perovskite/Transition Metal Dichalcogenide Heterostructures. *Advanced Materials Interfaces* 2022, 9, 2102174. doi:10.1002/admi.202102174

26. S. Ghosh, A. Varghese, H. Jawa, **Y. Yin**, N. V. Medhekar, S. Lodha. Polarity-Tunable Photocurrent through Band Alignment Engineering in a High-Speed $WSe_2/SnSe_2$ Diode with Large Negative Responsivity. *ACS Nano* 2022, 16, 4578–4587. doi:10.1021/acsnano.1c11110

27. D. Kumar, J. Hellerstedt, B. Field, B. Lowe, **Y. Yin**, N. V. Medhekar, A. Schiffrin. Manifestation of Strongly Correlated Electrons in a 2D Kagome Metal–Organic Framework. *Advanced Functional Materials* 2021, 31, 2106474. doi:10.1002/adfm.202106474

28. C. X. Trang, Q. Li, **Y. Yin**, J. Hwang, G. Akhgar, I. Di Bernardo, A. Grubišić-Čabo, A. Tadich, M. S. Fuhrer, S.-K. Mo, N. V. Medhekar, M. T. Edmonds. Crossover from 2D Ferromagnetic Insulator to Wide Band Gap Quantum Anomalous Hall Insulator in Ultrathin $MnBi_2Te_4$. *ACS Nano* 2021, 15, 13444–13452. doi:10.1021/acsnano.1c03936

29. Q. Li, J. S. Smith, **Y. Yin**, C. Wang, M. V. Klymenko, J. H. Cole, N. V. Medhekar. Localized Wannier Function Based Tight-Binding Models for Two-Dimensional Allotropes of Bismuth. *New Journal of Physics* 2021, 23, 063042. doi:10.1088/1367-2630/ac04c9

30. A. Grubišić-Čabo, J. C. Kotsakidis, **Y. Yin**, A. Tadich, M. Haldon, S. Solari, I. Di Bernardo, K. M. Daniels, J. Riley, E. Huwald, M. T. Edmonds, R. L. Myers-Ward, N. V. Medhekar, D. K. Gaskill, M. S. Fuhrer. Magnesium-Intercalated Graphene on SiC: Highly n-doped Air-Stable Bilayer Graphene at Extreme Displacement Fields. *Applied Surface Science* 2021, 541, 148612. doi:10.1016/j.apsusc.2020.148612

31. B. N. Shivananju, L. Zhou, **Y. Yin**, W. Yu, B. Shabbir, H. Mu, X. Bao, Y. Zhang, S. Tian, Q. Ou, S. Li, M. M. Hossain, Y. Zhang, H. Shao, G. Xing, N. V. Medhekar, C.-M. Li, J. Liu, Q. Bao. Probing the Dynamic Structural Changes of DNA Using Ultrafast Laser Pulse in Graphene-Based Optofluidic Device. *InfoMat* 2021, 3, 316–326. doi:10.1002/inf2.12114

32. Y. Zhang, **Y. Yin**, G. Dubuis, T. Butler, N. V. Medhekar, S. Granville. Berry Curvature Origin of the Thickness-Dependent Anomalous Hall Effect in a Ferromagnetic Weyl Semimetal. *npj Quantum Materials* 2021, 6, 17. doi:10.1038/s41535-021-00315-8

33. J. Qi, **Y. Yin**, X. Ding, J. Sun, J. Deng. First-Principles Study of Mechanical and Optical Properties for $ZnS_{1-x}O_x$ Alloying Compounds. *Materials Today Communications* 2020, 24, 101259. doi:10.1016/j.mtcomm.2020.101259

34. H. Ye, Y. Zhang, A. Wei, D. Han, Y. Liu, W. Liu, **Y. Yin**, M. Wang. Intrinsic-Strain-Induced Curling of Free-Standing Two-Dimensional Janus MoSSe Quantum Dots. *Applied Surface Science* 2020, 519, 146251. doi:10.1016/j.apsusc.2020.146251

35. J. C. Kotsakidis, A. Grubišić-Čabo, **Y. Yin**, A. Tadich, R. L. Myers-Ward, M. DeJarld, S. P. Pavunny, M. Currie, K. M. Daniels, C. Liu, M. T. Edmonds, N. V. Medhekar, D. K. Gaskill, A. L. Vázquez de Parga, M. S. Fuhrer. Freestanding n-Doped Graphene via Intercalation of Calcium and Magnesium into the Buffer Layer–SiC(0001) Interface. *Chemistry of Materials* 2020, 32, 6464–6482. doi:10.1021/acs.chemmater.0c01729

36. Y. Wu, Q. Ou, **Y. Yin**, Y. Li, W. Ma, W. Yu, G. Liu, X. Cui, X. Bao, J. Duan, G. Álvarez-Pérez, Z. Dai, B. Shabbir, N. V. Medhekar, X. Li, C.-M. Li, P. Alonso-González, Q. Bao. Chemical Switching of Low-Loss Phonon Polaritons in α-MoO_3 by Hydrogen Intercalation. *Nature Communications* 2020, 11, 2646. doi:10.1038/s41467-020-16459-3

37. J. L. Collins, C. Wang, A. Tadich, **Y. Yin**, C. Zheng, J. Hellerstedt, A. Grubišić-Čabo, S. Tang, S.-K. Mo, J. Riley, E. Huwald, N. V. Medhekar, M. S. Fuhrer, M. T. Edmonds. Electronic Band Structure of In-Plane Ferroelectric van der Waals β′-In_2Se_3. *ACS Applied Electronic Materials* 2020, 2, 213–219. doi:10.1021/acsaelm.9b00699

38. **Y. Yin**, M. S. Fuhrer, N. V. Medhekar. Selective Control of Surface Spin Current in Topological Pyrite-Type OsX_2 (X=Se, Te) Crystals. *npj Quantum Materials* 2019, 4, 47. doi:10.1038/s41535-019-0186-8

39. D. Kumar, C. Krull, **Y. Yin**, N. V. Medhekar, A. Schiffrin. Electric Field Control of Molecular Charge State in a Single-Component 2D Organic Nanoarray. *ACS Nano* 2019, 13, 11882–11890. doi:10.1021/acsnano.9b05950

40. F. Haque, A. Zavabeti, B. Y. Zhang, R. S. Datta, **Y. Yin**, Z. Yi, Y. Wang, N. Mahmood, N. Pillai, N. Syed, H. Khan, A. Jannat, N. Wang, N. V. Medhekar, K. Kalantar-zadeh, J. Z. Ou. Ordered Intracrystalline Pores in Planar Molybdenum Oxide for Enhanced Alkaline Hydrogen Evolution. *Journal of Materials Chemistry A* 2019, 7, 257–268. doi:10.1039/c8ta08330d

41. A. Schiffrin, M. Capsoni, G. Farahi, C.-G. Wang, C. Krull, M. Castelli, T. Roussy, K. A. Cochrane, **Y. Yin**, N. V. Medhekar, M. S. Fuhrer, A. Q. Shaw, W. Ji, S. A. Burke. Designing Optoelectronic Properties by On-Surface Synthesis: Formation and Electronic Structure of an Iron–Terpyridine Macromolecular Complex. *ACS Nano* 2018, 12, 6545–6553. doi:10.1021/acsnano.8b01026

42. J. Deng, **Y. Yin**, H. Niu, X. Ding, J. Sun, N. V. Medhekar. The Edge Stresses and Phase Transitions for Magnetic BN Zigzag Nanoribbons. *Scientific Reports* 2017, 7, 7855. doi:10.1038/s41598-017-08364-5

43. **Y. Yin**, J. Cervenka, N. V. Medhekar. Molecular Dipole-Driven Electronic Structure Modifications of DNA/RNA Nucleobases on Graphene. *Journal of Physical Chemistry Letters* 2017, 8, 3087–3094. doi:10.1021/acs.jpclett.7b01283

44. S. Mukherjee, B. Manna, A. V. Desai, **Y. Yin**, R. Krishna, R. Babarao, S. K. Ghosh. Harnessing Lewis Acidic Open Metal Sites of Metal–Organic Frameworks: the Foremost Route to Achieve Highly Selective Benzene Sorption Over Cyclohexane. *Chemical Communications* 2016, 52, 8215–8218. doi:10.1039/c6cc03015g

45. J. van Embden, L. Bourgeois, E. Della Gaspera, L. Waddington, **Y. Yin**, N. V. Medhekar, J. J. Jasieniak, A. S. R. Chesman. The Formation Mechanism of Janus Nanostructures in One-Pot Reactions: the Case of Ag–Ag_8GeS_6. *Journal of Materials Chemistry A* 2016, 4, 7060–7070. doi:10.1039/c6ta00398b

46. **Y. Yin**, J. Cervenka, N. V. Medhekar. Tunable Hybridization Between Electronic States of Graphene and Physisorbed Hexacene. *Journal of Physical Chemistry C* 2015, 119, 19526–19534. doi:10.1021/acs.jpcc.5b05428

47. J. Cervenka, A. Budi, N. Dontschuk, A. Stacey, A. Tadich, K. J. Rietwyk, A. Schenk, M. T. Edmonds, **Y. Yin**, N. V. Medhekar, M. Kalbac, C. I. Pakes. Graphene Field Effect Transistor as a Probe of Electronic Structure and Charge Transfer at Organic Molecule–Graphene Interfaces. *Nanoscale* 2015, 7, 1471–1478. doi:10.1039/c4nr05390g

B. Peer-Reviewed Conference Proceedings (1)

48. M. S. Fuhrer, M. T. Edmonds, D. Culcer, M. Nadeem, X. Wang, N. V. Medhekar, **Y. Yin**, J. H. Cole. Proposal for a Negative Capacitance Topological Quantum Field-Effect Transistor. *2021 IEEE International Electron Devices Meeting (IEDM)* 2021, 38.2.1–38.2.4. doi:10.1109/iedm19574.2021.9720587

CONFERENCE PRESENTATIONS

March 2021 — **Y. Yin**, M. S. Fuhrer, N. V. Medhekar. *Tuning the surface spin textures of topological materials.* American Physical Society (APS) March Meeting, virtual.

March 2021 — C. Wang, **Y. Yin**, M. S. Fuhrer, N. V. Medhekar. *Tuning the edge states of bismuthene via substrate effects.* APS March Meeting, virtual.

March 2021 — Q. Li, J. Smith, **Y. Yin**, C. Wang, M. Klymenko, J. Cole, N. V. Medhekar. *Tight-binding models for two-dimensional allotropes of bismuth based on localized Wannier functions.* APS March Meeting, virtual.

December 2018 — **Y. Yin**. *Enhancing electronic fingerprints of physisorbed molecules on graphene.* 4th International Conference on Two-Dimensional Materials (ICON-2DMAT 2018), Melbourne, Australia.

December 2017 — **Y. Yin**. *Exploring and predicting new topological electronic materials based on first-principles calculations.* FLEET Inaugural Annual Workshop, Lorne, Australia.

July 2014 — **Y. Yin**. *Tunable hybridisation between the electronic states of graphene and physisorbed molecules.* Molecular Modelling 2014, Gold Coast, Australia.

TEACHING

2017, 2018, 2023, 2024 — **Computational Materials Science** (undergraduate course), Central South University, China — taught as Visiting Scholar under the Monash University – Central South University collaboration program (see Employment History). Designed an intensive curriculum from foundations through DFT, high-performance computing and AI, ending in a group mini-project; course materials are openly available on GitHub.

2017 – Current — **Research-skills training**, Monash University — DFT training workshops and tutorials for Master's and PhD students.

2012 – 2016 — **Graduate Teaching Assistant** during PhD candidature, Monash University — *Modelling of Materials* and *Materials Characterisation*.

PROFESSIONAL SERVICE & OUTREACH

- **Peer reviewer** for *Nature Communications* and *Communications Physics*.
- **PhD thesis examiner** for 3 candidates, Department of Materials Science and Engineering, Monash University.
- **Science outreach** — Melbourne Knowledge Week (FLEET quantum-science outreach); annual Gordon Godfrey Workshop (UNSW); science communication via GitHub, X and Wikipedia.

MEDIA COVERAGE OF RESEARCH

September 2023 — *Topological gardening to achieve unexpected spin transport* — **Materials Australia** magazine.

December 2019 — *New spin directions in pyrite an encouraging sign for future spintronics* — **Australian Research Council (ARC) newsletter**.

November 2019 — *The hetero-interface is the device: a computational approach* — **FLEET** (ARC Centre of Excellence) website.