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研究領域：

實驗高壓物理、地球物理、超快光學、實驗凝態物理

Research interests:

Experimental high pressure physics, Geophysics, Ultrafast optics,
Condensed matter physics

2011: 美國伊利諾大學香檳校區 物理博士

2005: 國立台灣大學 物理系碩士

2004: 國立台灣大學 物理系學士

[經歷]

2022/09- 迄今 中央研究院 地球科學研究所 研究員

2023/01- 迄今 中央研究院 地球科學研究所 副所長

2023/02- 迄今 國立台灣大學 地質科學系 合聘教授

2022/12- 迄今 國立中央大學 地球科學系 兼任教授

2018/06-2022/09 中央研究院 地球科學研究所 副研究員

2013/10-2018/06 中央研究院 地球科學研究所 助研究員

2011/08-2013/10 美國史丹福大學及 SLAC 國家加速器實驗室 博士後研究員

2008/06-2011/07 美國伊利諾大學 研究助理

2007/08-2008/05 美國伊利諾大學 教學助理

[榮譽]

- 國科會傑出研究獎 Outstanding Research Award, National Science and Technology Council, 2024
- 傑出人才發展基金會飛躍講座 The Leap Fellowship, Foundation for the Advancement of Outstanding Scholarship, 2024
- 國科會國際年輕傑出學者研究計畫 International Outstanding Young Scholars Research Program, National Science and Technology Council, 2024-2027
- 中央研究院特優學術研究獎金 Academia Sinica Presidential Scholars Program, 2022-2025
- 中央研究院深耕計畫 Investigator Award, Academia Sinica, 2022-2026
- 科技部傑出研究獎 Outstanding Research Award, Ministry of Science and Technology, 2021
- 科技部優秀年輕學者研究計畫 Excellent Young Scholars Research Program, Ministry of Science and Technology, 2018-2021 and 2021-2024
- 科技部吳大猷先生紀念獎 Ta-You Wu Memorial Award, Ministry of Science and Technology, 2019
- 中央研究院年輕學者研究著作獎 Academia Sinica Research Award for Junior Research Investigators, 2018
- 傑出人才發展基金會第六屆年輕學者創新獎 Young Scholars' Creativity Award, Foundation for the Advancement of Outstanding Scholarship, 2018
- 中央研究院前瞻計畫 Career Development Award, Academia Sinica, 2017-2021
- 中央研究院重要研究成果 Significant Research Achievements of Academia Sinica, 2017, 2018, 2020, 2023
- Invited speaker, JpGU Meeting, 2023
- Invited speaker, The 5th Annual Meeting of Taiwan Earthquake Center, 2022
- Invited speaker, The 10th Asian Conference on High Pressure Research, 2021
- Invited speaker, EGU General Assembly, 2021
- Invited speaker, AGU Fall Meeting, 2020
- Invited speaker, the 4th International Conference on Matter and Radiation at Extremes, 2019
- Invited speaker, the 26th International Conference on High Pressure Science and

Technology, 2017

- Invited speaker, the 1st Asia-Pacific workshop on lithosphere and mantle dynamics, 2016
- Ovshinsky Student Travel Award, APS Division of Materials Physics, 2011
- Taiwan Merit Scholarship, National Science Council, Taiwan, ROC, 2006
- Graduate Thesis Award, The Physical Society of the Republic of China, 2006
- Dean's Award for the Best Master Thesis, College of Science, NTU, 2005

[著作]

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1. Ji-Ching Chen*[†], Frédéric Deschamps, and Wen-Pin Hsieh, "Temporal changes in Europa's ice shell thickness: Insights from models of convection," *J. Geophys. Res. Planets*, *submitted*.
2. Fong-Jyun Jhong, Chao-Chih Chen[†], Wen-Pin Hsieh*, Miin-Jang Chen*, "High thermal conductivity near phonon ballistic transport of nanoscale AlN thin films prepared by atomic layer annealing," *submitted*.
3. Wen-Pin Hsieh*, Takayuki Ishii, Frédéric Deschamps, Yi-Chi Tsao[†], Jen-Wei Chang[†], and Giacomo Criniti, "Reduced thermal conductivity of hydrous aluminous silica and calcium ferrite-type phase promote water transportation to Earth's deep mantle," *J. Geophys. Res. Solid Earth*, **130**, e2024JB030704 (2025).
4. Wen-Pin Hsieh*, Chung-Hung Lin[†], Chao-Chih Chen[†], and Jen-Wei Chang[†], "Testing the validity of the Wiedemann-Franz law for metals and alloys at high pressures," *Appl. Phys. Lett.*, **125**, 252201 (2024).
5. Yu-Hsiang Chien[†], Enrico Marzotto*, Yi-Chi Tsao[†], and Wen-Pin Hsieh*, "Anisotropic thermal conductivity of antigorite along slab subduction impacts seismicity of intermediate-depth earthquakes," *Nat. Commun.*, **15**, 5198 (2024).
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6. Wei-Han Tsai, Cheng-Lung Chen*, Krishna Ranganayakulu Vankayala, Ying-Hsiang Lo, Wen-Pin Hsieh, Te Hsien Wang, Ssu-Yen Huang, and Yang-Yuan Chen*, "Enhancement of ZT in Bi_{0.5}Sb_{1.5}Te₃ thin film through lattice orientation management," *Nanomaterials*, **14**, 747 (2024).
7. J. M. Guerrero*, Frédéric Deschamps*, Wen-Pin Hsieh, and Paul J. Tackley, "The combined effect of heterogeneous thermal conductivity, chemical density contrast, and

heat-producing element enrichment on the stability of primordial reservoirs above the core-mantle boundary,” *Earth Planet. Sci. Lett.*, **637**, 118699 (2024).

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9. Wen-Pin Hsieh*, Frédéric Deschamps*, Yi-Chi Tsao[†], Takashi Yoshino, and Jung-Fu Lin, “A thermally conductive Martian core with implications for its dynamo cessation,” *Sci. Adv.*, **10**, eadk1087 (2024).
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10. Yu-Ping Hung[†], Yi-Chi Tsao[†], Chun-Hung Lin[†], and Wen-Pin Hsieh*, “Thermal conductivity of aluminous garnets in Earth’s deep interior,” *American Mineralogist*, **109**, 482 (2024).
11. Wen-Pin Hsieh*, Yun-Yuan Chang*[†], Yi-Chi Tsao[†], Chun-Hung Lin[†], and Kenny Vilella, “Exceptionally low thermal conduction of basaltic glasses and implications for the thermo-chemical evolution of the Earth's primitive magma ocean,” *J. Geophys. Res. Solid Earth*, **129**, e2023JB027722 (2024).
12. Sean R. Shieh*, Wen-Pin Hsieh*, and Yi-Chi Tsao[†], “Thermal conductivity of hydrogen at high pressure and high temperature: implications to giant planets,” *Geophys. Res. Lett.*, **50**, e2023GL103994 (2023).
13. S. R. Sahu, S. S. Majid[†], A. Ahad, A. Tripathy, K. Dey, S. Pal, B. K. De, Wen-Pin Hsieh, R. Rawat, V. G. Sathe, and D. K. Shukla, “Kinetically-decoupled electrical and structural phase transitions in VO₂,” *Phys. Rev. B*, **107**, 134106 (2023).
14. J. M. Guerrero*, F. Deschamps*, Y. Li, Wen-Pin Hsieh, and P. J. Tackley, “Influence of heterogeneous conductivity on the long-term evolution of the lower mantle thermo-chemical structure: implications for primordial reservoirs,” *Solid Earth*, **14**, 119 (2023).
15. Wen-Pin Hsieh*, Yi-Chi Tsao[†], and Chun-Hung Lin[†], “Thermal conductivity of helium and argon at high pressure and high temperature (*invited*),” *Materials*, **15**, 6681 (2022).
16. Yongjian Zhou, Wen-Pin Hsieh, Chao-Chih Chen[†], Xianghai Meng, Fei Tian, Zhifeng Ren, Li Shi, Jung-Fu Lin, and Yaguo Wang*, “Defect modulated thermal behavior of BAs under high pressure,” *Appl. Phys. Lett.*, **121**, 121902 (2022).
17. Wen-Pin Hsieh*, Enrico Marzotto, Takayuki Ishii, Leonid Dubrovinsky, Alena A. Aslandukova, Giacomo Criniti, Yi-Chi Tsao[†], Chun-Hung Lin[†], Jun Tsuchiya, and Eiji

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18. Cheng-Lung Chen, Te-Hsien Wang, Yu Zih-Gin, Yohanes Hutabalian, Ranganayakulu K. Vankayala, Chao-Chih Chen[†], Wen-Pin Hsieh, Horng-Tay Jeng, Da-Hua Wei, and Yang-Yuan Chen*, "Modulation doping enables ultrahigh power factor and thermoelectric ZT in n-type Bi₂Te_{2.7}Se_{0.3}," *Adv. Sci.*, **9**, 2201353 (2022).
 19. Yang Li, Frédéric Deschamps, Zhidong Shi, Joshua Guerrero, Wen-Pin Hsieh, Liang Zhao, and Paul Tackley, "Influence of composition-dependent thermal conductivity on the long-term evolution of primordial reservoirs in the Earth's lower mantle," *Earth, Planets and Space*, **74**, 46 (2022).
 20. Wen-Pin Hsieh*, Enrico Marzotto[†], Yi-Chi Tsao[†], Takuo Okuchi, and Jung-Fu Lin*, "High thermal conductivity of stishovite promotes rapid warming of a sinking slab in Earth's mantle," *Earth Planet. Sci. Lett.*, **584**, 117477 (2022).
 21. Sean R. Shieh*, Wen-Pin Hsieh*, Yi-Chi Tsao[†], Christian Crisostomo, and Han Hsu*, "Low thermal conductivity of carbon dioxide at high pressure: implications for icy planetary interiors," *J. Geophys. Res. Planets*, **127**, e2022JE007180 (2022).
 22. Dylan W. Meyer[†]*, Wen-Pin Hsieh, Han Hsu, Ching-Yi Kuo, and Jung-Fu Lin, "Thermal conductivity and compressional velocity of methane at high pressure: insights into thermal transport properties of icy planet interiors," *J. Geophys. Res. Planets*, **127**, e2021JE007059 (2022).
 23. Yu-Hsiang Chien[†]*, Kai-Chi Wei[†], and Wen-Pin Hsieh*, "Thermal conductivity of single-crystal brucite at high pressures with implications for thermal anomaly in the shallow lower mantle," *American Mineralogist*, **107**, 790 (2022).
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 25. Han-Ting Liao[†], Bo-Wei Shih, Wen-Pin Hsieh, Dung-Yue Su, and Feng-Yu Tsai*, "Enhanced thermoelectric properties of atomic-layer-deposited ZnO-based superlattice thin films by tuning the composition and structure of interlayers," *Ceramics International* **48**, 10202 (2022).
 26. Ying-Yu Wang, Ding-Rui Chen, Jen-Kai Wu, Tian-Hsin Wang, Chiashain Chuang, Ssu-Yen Huang, Wen-Pin Hsieh, Mario Hofmann, Yuan-Huei Chang, and Ya-Ping Hsieh*, "2D mechano-thermoelectric heterojunctions for self-powered strain sensors,"

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27. Wen-Pin Hsieh*, “High-pressure thermal conductivity and compressional velocity of NaCl in B1 and B2 phase,” *Sci. Rep.*, **11**, 21321 (2021).
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<https://phys.org/news/2020-07-earth-sustain-magnetic-field.html>
30. Enrico Marzotto[†]*, Wen-Pin Hsieh*, Takayuki Ishii, Keng-Hsien Chao[†], Gregor J. Golabek, Marcel Thielmann, and Eiji Ohtani*, “Effect of water on lattice thermal conductivity in ringwoodite and its implications for the thermal evolution of descending slabs,” *Geophys. Res. Lett.*, **47**, e2020GL087607 (2020).
31. Bo-Wei Shih[†], Wen-Pin Hsieh, Jing-Jong Shyue, and Feng-Yu Tsai*, “Enhanced thermoelectric properties of atomic-layer-deposited Hf:Zn¹⁶O/¹⁸O superlattice films by interface-engineering,” *Ceramics International* **46**, 7122 (2020).
32. Wen-Pin Hsieh*, Takayuki Ishii, Keng-Hsien Chao[†], Jun Tsuchiya, Frédéric Deschamps, and Eiji Ohtani*, “Spin transition of iron in δ -(Al,Fe)OOH induces thermal anomalies in Earth’s mantle,” *Geophys. Res. Lett.*, **47**, e2020GL087036 (2020).
33. Jen-Kai Wu[†], Mario Hofmann, Wen-Pin Hsieh, Szu-Hua Chen, Zhi-Long Yen, Sheng-Kuei Chiu, Yi-Ru Luo, Chih-Chieh Chiang, Ssu-Yen Huang, Yuan-Huei Chang*, and Ya-Ping Hsieh*, “Enhancing thermoelectric properties of 2D Bi₂Se₃ by 1D texturing with graphene,” *ACS Appl. Energy Mater.* **2**, 8411 (2019).
34. Deniz P. Wong*, Masoud Aminzare, Ta-Lei Chou, Chin-Sheng Pang, Yi-Ren Liu, Tzu-Hsien Shen, Benjamin K. Chang, Hsiang-Ting Lien, Sun-Tang Chang, Chia-Hua Chien, Yang Yuan Chen, Ming-Wen Chu, Yaw-Wen Yang, Wen-Pin Hsieh, Gerda Rogl, Peter Franz Rogl, Yohei Kakefuda, Takao Mori, Mei-Yin Chou, Li-Chyong Chen*, and Kuei-Hsien Chen*, “Origin of band modulation in GeTe-rich Ge-Sb-Te thin film,” *ACS Appl. Electron. Mater.* **1**, 2619 (2019).

35. Daniel Olaya, Chien-Chih Tseng, Wen-Hao Chang, Wen-Pin Hsieh, Lain-Jong Li, Zhen-Yu Juang*, and Yenny Hernandez*, “Cross-plane thermoelectric figure of merit in graphene-C₆₀ heterostructures at room temperature,” *FlatChem* **14**, 100089 (2019).
36. Xianghai Meng, Tribhuwan Pandey, Jihoon Jeong, Suyu Fu, Jing Yang, Ke Chen, Akash Singh, Feng He, Xiaochuan Xu, Jianshi Zhou, Wen-Pin Hsieh, Abhishek K. Singh, Jung-Fu Lin*, and Yaguo Wang*, “Thermal conductivity enhancement in MoS₂ under extreme strain,” *Phys. Rev. Lett.* **122**, 155901 (2019).
37. Frédéric Deschamps* and Wen-Pin Hsieh, “Lowermost mantle thermal conductivity constrained from experimental data and tomographic models,” *Geophys. J. Int.* **219**, S115 (2019).
38. Jihoon Jeong, Xianghai Meng, Ann Rockwell, Seth Bank, Wen-Pin Hsieh, Jung-Fu Lin*, and Yaguo Wang*, “Picosecond transient thermoreflectance for thermal conductivity characterization,” *Nanoscale and Microscale Thermophysical Engineering* **23**, 211 (2019).
39. Keng-Hsien Chao[†] and Wen-Pin Hsieh*, “Thermal conductivity anomaly in (Fe_{0.78}Mg_{0.22})CO₃ siderite across spin transition of iron,” *J. Geophys. Res. Solid Earth*, **124**, 1388 (2019).
40. Wen-Pin Hsieh*, Frédéric Deschamps, Takuo Okuchi, and Jung-Fu Lin*, “Effects of iron on the lattice thermal conductivity of Earth’s deep mantle and implications for mantle dynamics,” *Proc. Natl. Acad. Sci. USA*, **115**, 4099 (2018).
41. Wen-Pin Hsieh*, Frédéric Deschamps, Takuo Okuchi, and Jung-Fu Lin*, “Reduced lattice thermal conductivity of Fe-bearing bridgmanite in Earth’s deep lower mantle,” *J. Geophys. Res. Solid Earth*, **122**, 4900 (2017). (*Selected as a featured article in JGR*)
42. Zhen-Yu Juang, Chien-Chih Tseng, Yumeng Shi, Wen-Pin Hsieh, Sou Ryuzaki, Noboru Saito, Chia-En Hsiung, Wen-Hao Chang, Yenny Hernandez, Yu Han, Kaoru Tamada, and Lain-Jong Li*, “Graphene-Au nanoparticle based vertical heterostructures: a novel route towards high-ZT thermoelectric devices,” *Nano Energy* **38**, 385 (2017).
43. Yun-Yuan Chang[†], Wen-Pin Hsieh*, Eh Tan, and Jihua Chen, “Hydration-reduced lattice thermal conductivity of olivine in Earth’s upper mantle,” *Proc. Natl. Acad. Sci. USA*, **114**, 4078 (2017).
44. Wen-Pin Hsieh* and Frédéric Deschamps, “Thermal conductivity of H₂O-CH₃OH mixtures at high pressures: implications for the dynamics of icy super-Earths outer shells,” *J. Geophys. Res. Planets*, **120**, 1697 (2015).

45. Wen-Pin Hsieh*, “Thermal conductivity of methanol-ethanol mixture and silicone oil at high pressures,” *J. Appl. Phys.* **117**, 235901 (2015).
46. R. B. Wilson, Brent A. Apgar, Wen-Pin Hsieh, Lane W. Martin, and David G. Cahill, “Thermal conductance of strongly bonded metal-oxide interfaces,” *Phys. Rev. B* **91**, 115414 (2015).
47. Wen-Pin Hsieh* and Yu-Hsiang Chien[†], “High pressure Raman spectroscopy of H₂O-CH₃OH mixtures,” *Sci. Rep.* **5**, 8532 (2015).

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48. Wen-Pin Hsieh*, Mariano Trigo, David Reis, G. Artioli, Lorenzo Malavasi, and Wendy L. Mao, “Evidence for photo-induced monoclinic metallic VO₂ under high pressure,” *Appl. Phys. Lett.* **104**, 021917 (2014).

Highlighted in

<http://simes.stanford.edu/highlights/creation-of-a-novel-high-pressure-transient-state-s-heds-new-light-on-the-insulator-to-metal-transition-in-vo2/>

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50. Wen-Pin Hsieh*, Peter Zaldan, M. Wuttig, Aaron Lindenberg, and Wendy L. Mao, “High pressure Raman spectroscopy of phase change materials,” *Appl. Phys. Lett.* **103**, 191908(2013).
51. Gregory Hohensee, Wen-Pin Hsieh, Mark D. Losego, and David G. Cahill, “Interpreting picosecond acoustics in the case of low interface stiffness,” *Rev. Sci. Instrum.* **83**, 114902 (2012).
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53. Wen-Pin Hsieh* and David G. Cahill, “Ta and Au(Pd) alloy metal film transducers for time-domain thermoreflectance at high pressures,” *J. Appl. Phys.* **109**, 113520 (2011). (*Selected in the Virtual Journal of Ultrafast Science, July 2011*)
54. Wen-Pin Hsieh*, Mark D. Losego, Paul V. Braun, Sergei Shenogin, Pawel Keblinski, and David G. Cahill, “Testing the minimum thermal conductivity model for amorphous polymers using high pressure,” *Phys. Rev. B* **83**, 174205 (2011).

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57. Wen-Pin Hsieh and Y. L. Wang*, “Prolonged electron emission as a method to fabricate a stable and bright dual ion/electron point source,” *Appl. Phys. Lett.* **87**, 194107 (2005).
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