TING CHENG

School of Materials Science and Engineering, Tongji University
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ACADEMIC QUALIFICATIONS

Ph.D. in Physical Chemistry, Peking University, Beijing, China
2016– 2021
Advisors: **Prof. Zhongfan Liu** (***Academician of the Chinese Academy of Sciences***) & **Prof. Zhirong Liu**

B.E. in Physics (Honor Class), Central China Normal University, Wuhan, Hubei, China **2012– 2016**

RESEARCH EXPERIENCE

Tongji University	Research Fellow	**2026–**
CityU HK	Postdoctoral Researcher	**2024– 2026**
Rice University	Postdoctoral Researcher	**2022– 2024**
Peking University	Research Assistant	**2021– 2022**

PUBLICATION PAGE (#equal contribution, *corresponding author)

SECTION A– First/Co-first/corresponding author publications

1. **T. Cheng,** K. V. Bets, B. I. Yakobson*, *Synthesis landscapes for ammonia borane CVD of h-BN and BNNT: unraveling reactions and intermediates from first principles.* **J. Am. Chem. Soc.** 146, 9318-9325 (2024).
2. **T. Cheng,** K. V. Bets, B. I. Yakobson*, *Hydrogen-driven phase differentiation in BN nucleation on diamond*. **Adv. Funct. Mater.** 2413675 (2024).
3. **T. Cheng**, Z. R. Liu, F. Ding*, and Z. F. Liu*, *The mechanism of graphene vapor-solid growth on insulating substrates*, **ACS Nano** 15, 7399-7408 (2021).
4. F. F. Liu, …**T. Cheng***, Q. Q. Ji*, Z. F. Liu*, J. Y. Sun*, *Co-field-reconciled direct growth of 6-inch monolayer graphene*, **Nat. Sci. Rev.** 13, nwaf562 (2026).
5. Z. B. Zhang#, M. C. Ding#, **T. Cheng#**, ...F. Ding*, and K. H. Liu*, *Continuous epitaxy of single-crystal graphite films by isothermal carbon diffusion through nickel,* **Nat. Nanotech.** 17, 1258-1264 (2022).
6. J. H. Wang#, X. Z. Xu#, **T. Cheng#**, …S. W. Wu*, F. Ding*, and K. H. Liu*, *Dual-coupling-guided epitaxy growth of wafer-scale single-crystal WS_2 monolayer on vicinal a- plane sapphire*, **Nat. Nanotech.** 17, 33-38 (2022). Web of Science: Highly Cited Paper
7. Y. S. Zhu#, J. C. Zhang#, **T. Cheng#**, …Zhongfan Liu*, *Controlled Growth of Single-Crystal Graphene Wafers on Twin-Boundary-Free Cu (111) Substrates*. **Adv. Mater.** 36, 2308802 (2023).
8. S. C. Xu#, **T. Cheng#**, Q. W. Yan, …J. Zhang*. *Chloroform-Assisted Rapid Growth of Vertical Graphene Array and Its Application in Thermal Interface Materials,* **Adv. Sci.** 9, 202200737 (2022).

9. Z. J. Wang, **T. Cheng***, Z. R. Liu*, *Intrinsic carrier mobility in non-centrosymmetric FeB_2 monolayer.* **J. Phys. Chem. C** 126, 627 (2022).
10. **T. Cheng**, L. Z. Sun, Z. R. Liu, F. Ding*, and Z. F. Liu*, *Theoretical calculation boosting the chemical vapor deposition growth of graphene film*, **APL Mater.** 9, 060906 (2021).
11. **T. Cheng**, L. Z. Sun, Z. R. Liu, F. Ding*, and Z. F. Liu*, *Roles of transition metal substrates in graphene chemical vapor deposition growth*, **Acta Phys. -Chim. Sin.** 2012006 (2021).
12. **T. Cheng**, Z. F. Liu, and Z. R. Liu*. *High elastic moduli, controllable bandgap and extraordinary carrier mobility in single-layer diamond*, **J. Mater. Chem. C** 8, 13819-13826 (2020).
13. Z. L. Chen#, H. L. Chang#, **T. Cheng#**, ..., F. Ding*, P. Gao*, and Z. F. Liu*. *Direct growth of Nanopatterned graphene on sapphire and its application in light emitting diodes*, **Adv. Funct. Mater.** 30, 2001483 (2020).
14. Y. D. Xie#, **T. Cheng#**, C. Liu#, K. Chen, ...F. Ding*, K. H. Liu*, and Z. F. Liu*. *Ultrafast catalyst-free graphene growth on glass assisted by local fluorine supply*, **ACS Nano** 13, 10272-10278 (2019).
15. **T. Cheng**, C. W. Tan, S. Q. Zhang, T. Tu, H. L. Peng*, and Z. R. Liu*. *Raman spectra and strain effects in bismuth oxychalcogenides*, **J. Phys. Chem. C** 122, 19970-19980 (2018).
16. **T. Cheng**, H. F. Lang, Z. Z. Li, Z. F. Liu, and Z. R. Liu*. *Anisotropic carrier mobility in two-dimensional materials with tilted Dirac cones: theory and applications*, **Phys. Chem. Chem. Phys.** 19, 23942-23950 (2017).

SECTION B- Other representative publications

17. C. T. Wang, **T. Cheng**, Z. R. Liu, F. Liu*, H. Q. Huang*, *Structural Amorphization-Induced Topological Order*, **Phys. Rev. Lett**. 128, 056401 (2022).
18. Q. Sun, **T. Cheng**, Z. R. Liu, and L. M. Qi*. *A cobalt silicate modifies BiVO4 photoanode for efficient solar water oxidation*, **Appl. Catal. B: Environ.** 277, 119189 (2020).
19. J. C. Zhang#, L. Z. Sun#, K. C. Jia#, X. T. Liu, **T. Cheng**, H. L. Peng*, L. Lin*, and Z. F. Liu*. *New growth frontier: superclean graphene*, **ACS Nano** 14, 10796-10803 (2020).
20. P. F. Yang#, Z. P. Zhang#, M. X. Sun#, F. Lin, **T. Cheng**, ..., D. Xie*, and Y. F. Zhang*. *Thickness tunable wedding-cake-like MoS2 flakes for high-performance optoelectronics*, **ACS Nano** 13, 3649-3658 (2019).
21. S. S. Zhang, N. Zhang, Y. Zhao, **T. Cheng**, X. B. Li, R. Feng, H. Xu, Z. R. Liu, J. Zhang*, and L. M. Tong*. *Spotting the differences in two-dimensional materials-the Raman scattering perspective*, **Chem. Soc. Rev.** 47, 3217-3240 (2018).
22. J. Guo, R. Xiang, **T. Cheng**, S. Maruyama*, Y. Li*, *One-Dimensional van der Waals Heterostructures: A Perspective*, **ACS Nanoscience Au** 2, 3-11 (2021).
23. Y. Q. Wang, Z. J. Wang, **T. Cheng**, Z. R. Liu*, *Carrier mobility of two-dimensional Dirac materials: the influence of optical phonon scattering*, **Phys. Chem. Chem. Phys.**, 23491- 23501.

SELECTED CONFERENCE PRESENTATIONS

1. First-Principles insights into graphene growth mechanisms on insulating substrates and beyond (INVITED Oral), 1st Global Chinese Materials Conference, Namur, Belgium, July 2025.
2. Anisotropic carrier mobility of distorted Dirac cones: theory and application. 2017 International Forum on graphene in Shenzhen (Poster). Shenzhen, China, April 2017 (selected as “BEST POSTER”)
3. Mobility in tilted Dirac cones: theory and application. 17th Asian Chemical Congress (Oral). Melbourne, Australia, July 2017.
4. Anisotropic carrier mobility in two-dimensional materials with tilted Dirac cones: theory and application. APS March meeting (Oral). Los Angeles, USA, March 2018.
5. Theoretical study on the anisotropic carrier mobility in two-dimensional materials with tilted Dirac cones. The 31th Chinese Chemical Society (Poster). Hangzhou, China, May 2018.
6. Raman Spectra and Strain Effects in Bismuth Oxychalcogenides. 14th Sino-US Forum on Nanoscale Science and Technology (Poster). Changsha, China, June 2019.
7. The mechanism of graphene vapor-solid growth on insulating substrates. Graphene 2019 (Poster). Rome, Italy, June 2019.
8. Mechanism of local fluorine assisted graphene growth on insulated substrate. 2019 Beijing Graphene Forum (Poster) Beijing, China, October 2019.

SELECTED HONORS AND AWARDS

Royal Society of Chemistry’s 2023 Outstanding Reviewer	2023
National Scholarship for Graduate Students, the Ministry of Education of China	2020
Triple-A Student, Peking University	2019
HORIBA Scholarship of Physical Chemistry	2019
Graduate Student Scholarship, Peking University	2018
Best Poster Award of 2017 International Forum on Graphene in Shenzhen	2017
May Forth Scholarship, Peking University	2017