

# Curriculum Vitae

## Tengteng Chen

Assistant Professor

Department of Chemistry

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## Education Background

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- 2014.09-2020.05 Ph.D. in Chemistry, Brown University, Providence, RI, USA, Advisor: **Prof. Lai-Sheng Wang**
- 2009.08-2013.06 B.S. in Applied Physics, Special Class for Gifted Young (SCGY), University of Science and Technology of China (USTC), Hefei, Anhui, China

## Professional Experiences

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- 2023.08-present **Assistant Professor**  
Dept. of Chemistry, HKUST, Hong Kong
- 2020.06-2023.06 **Postdoctoral Scholar**  
Dept. of Chemistry and Biochemistry, University of California, San Diego, USA  
Advisor: Prof. Wei Xiong
- 2014.09-2020.05 **Ph.D. Candidate**  
Dept. of Chemistry, Brown University, USA  
Advisor: Prof. Lai-Sheng Wang
- 2013.08-2014.02 **Ph.D. Candidate**  
Dept. of Chemistry, University of Pennsylvania, USA
- 2012.09-2013.02 **Research Assistant**  
Dept. of Modern Physics, USTC, China  
Advisor: Prof. Jiangfeng Du

## Awards & Honors

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- Young Elite Scientists Sponsorship Program by CAST, (First awardee in Hong Kong), 2023
- Chinese Government Award for Outstanding Self-Financed Students Abroad, 2021
- Sigma Xi Award for Excellence in Graduate Research, 2020

## Grants

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1. RGC - Early Career Scheme (ECS), Studying ultrafast molecular dynamics and chemical processes under vibrational strong coupling by pump-probe and two-dimensional infrared spectroscopy, HKD \$831,657 (07/2024-07/2027)
2. Young Elite Scientists Sponsorship Program by CAST, RMB ¥300,000 (01/2024-01/2027)
3. HKUST, office of the Vice-President for Research and Development (VPRDO) equipment fund, HKD \$1,250,000 (12/2023-06/2024)
4. HKUST Post-Doctoral Fellowship (PDF) Matching Fund 2024, HKD \$162,000.
5. Open Research Fund of Key Laboratory of Precision and Intelligent Chemistry (University of Science and Technology of China, USTC), RMB ¥200,000 (01/2025-12/2025)

6. HKUST, office of the Vice-President for Research and Development (VPRDO) equipment fund, HKD \$200,000 (12/2023-06/2024)

### Selected Publications

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- A1 **Chen, T.-T.**; Du, M.; Yang, Z.; Yuen-Zhou, J.; Xiong, W., Cavity-enabled enhancement of ultrafast intramolecular vibrational redistribution over pseudorotation. *Science* **2022**, 378 (6621), 790-794.
- A2 Ma, J.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup>\* Li, H.;<sup>+</sup> Bumüller, D.; Weigend, F.; Jian, T.; Kappes, M. M.; Schooss, D.;\* Li, W.-L.;\* Xing, X.-P.;\* Wang, L.-S.;\* On the remarkable resistance to oxidation by the Bi<sub>18</sub><sup>-</sup> cluster. *Sci. Adv.* **2024**, 10 (44), eads4724. (+ indicates the co-first authorship, \* indicates the co-corresponding authorship)
- A3 Li, W.-L.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup> Chen, W.-J.; Li, J.; Wang, L.-S., Monovalent lanthanide(I) in borozene complexes. *Nat. Commun.* **2021**, 12 (1), 6467. (+ indicates the co-first authorship)
- A4 **Chen, T.-T.**; Li, W.-L.; Chen, W.-J.; Yu, X.-H.; Dong, X.-R.; Li, J.; Wang, L.-S., Spherical trihedral metallo-borosphenes. *Nat. Commun.* **2020**, 11 (1), 2766.
- A5 Cheung, L. F.;\* **Chen, T.-T.**;<sup>\*</sup> Kocheril, G. S.; Chen, W.-J.; Czekner, J.; Wang, L.-S., Observation of Four-Fold Boron–Metal Bonds in RhB(BO<sup>-</sup>) and RhB. *J. Phys. Chem. Lett.* **2020**, 11 (3), 659-663. (\* indicates the co-first authorship)  
**C&EN in Volume 98 Issue 5, 2020, “Boron makes quadruple bond with rhodium”**  
RhB selected as “C&EN’s molecules of the year for 2020”
- B1 Dong, X.-R.; Zhang, J.-X.; **Chen, T.-T.**;<sup>\*</sup> Xu, C.-Q.;\* Li, J.\* , Metal-Centered Boron-Wheel Cluster of Y@B<sub>11</sub><sup>2-</sup> with Rare D<sub>11h</sub> Symmetry. *Inorg. Chem.* **2024**, 63 (14), 6276-6284. (\* indicates the co-corresponding authorship)
- B2 Wang, Z.-L.;\* **Chen, T.-T.**;<sup>\*</sup> Chen, W.-J.; Li, W.-L.; Zhao, J.; Jiang, X.-L.; Li, J.; Wang, L.-S.; Hu, H.-S., The smallest 4f-metalla-aromatic molecule of cyclo-PrB<sub>2</sub><sup>-</sup> with Pr–B multiple bonds. *Chem. Sci.* **2022**, 13 (34), 10082-10094. (\* indicates the co-first authorship)
- B3 **Chen, T.-T.**; Cheung, L. F.; Chen, W.-J.; Cavanagh, J.; Wang, L.-S., Observation of Transition-Metal–Boron Triple Bonds in IrB<sub>2</sub>O<sup>-</sup> and ReB<sub>2</sub>O<sup>-</sup>. *Angew. Chem. Int. Ed.* **2020**, 59 (35), 15260-15265.
- B4 Li, W.-L.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup> Xing, D.-H.; Chen, X.; Li, J.; Wang, L.-S., Observation of highly stable and symmetric lanthanide octa-boron inverse sandwich complexes. *Proc. Natl. Acad. Sci. U.S.A.* **2018**, 115 (30), E6972-E6977. (+ indicates the co-first authorship)
- B5 **Chen, T.-T.**; Li, W.-L.; Jian, T.; Chen, X.; Li, J.; Wang, L.-S., PrB<sub>7</sub><sup>-</sup>: A Praseodymium-Doped Boron Cluster with a Pr<sup>II</sup> Center Coordinated by a Doubly Aromatic Planar η<sup>7</sup>-B<sub>7</sub><sup>3-</sup> Ligand. *Angew. Chem. Int. Ed.* **2017**, 56 (24), 6916-6920.

### Conferences and Presentations

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1. **Invited Talk**, International Conference on Chemical Dynamics (ICCD 2024), Shenzhen, (2024.12.02)
2. **Invited Talk**, 3rd International Symposium on New Molecules and Clusters, Shanghai, (2024.08.24)
3. **Panel Invited Talk**, The 34th Chinese Chemical Society (CCS) Congress, 2nd Panel, Nonlinear Spectroscopic Chemistry, Guangzhou, (2024.06.16)
4. **Invited Talk**, Dept. of Physics, City University of Hong Kong, (2024.04)
5. **Invited Talk**, Dept. of Chemistry, Tsinghua University, (2023.11)
6. **Invited Talk**, Dept. of Chemistry, Southern University of Science and Technology (SUSTech), (2023.10)
7. **Invited Talk**, Hefei National Laboratory for Physical Sciences at Microscale (HFNL), USTC, (2023.07)
8. **Invited Talk**, School of Chemical Science and Engineering, Tongji University, (2023.06)
9. **Invited Talk**, Telluride Workshop: *Polariton Chemistry and Molecular Cavity Quantum Electrodynamics*, Telluride, Colorado, USA, (2023.06)
10. **Invited Talk**, APS March Meeting, Las Vegas, Nevada, USA, (2023.03)

11. **Oral Presentation**, ACS Spring Meeting, San Diego, California, USA, (2022.03)

## Research Interests

*Strong Light-Matter Coupling, Polariton Chemistry, Pump Probe and 2D IR Spectroscopy, Ultrafast Dynamics, Chemical Reactions, Chemical Bonding, Photoelectron Spectroscopy, Nanoclusters, Experimental Physical Chemistry*

## Full Publication List

### *After joining HKUST*

- 1) Ma, J.;<sup>+</sup> **Chen, T.-T.**;<sup>\*,+</sup> Li, H.;<sup>+</sup> Bumüller, D.; Weigend, F.; Jian, T.; Kappes, M.; Schooss, D.;<sup>\*</sup> Li, W.-L.;<sup>\*</sup> Xing, X.-P.;<sup>\*</sup> Wang, L.-S.<sup>\*</sup>, On the Remarkable Resistance to Oxidation by the Bi<sub>18</sub><sup>-</sup> Cluster. *Sci. Adv.* **2024**, *10* (44), eads4724. (+ indicates the co-first authorship, \* indicates the co-corresponding authorship)
- 2) Burkhardt, J.;<sup>+</sup> **Chen, T.-T.**;<sup>\*,+</sup> Chen, W.-J.; Yuan, D.-F.; Li, W.-L.;<sup>\*</sup> Wang, L.-S.<sup>\*</sup>, Probing the Structures and Lanthanum–Lanthanum Bonding in La<sub>2</sub>B<sub>n</sub><sup>-</sup> (n = 4–6) Clusters. *Inorg. Chem.* **2024**. <https://pubs.acs.org/doi/10.1021/acs.inorgchem.4c02950> (+ indicates the co-first authorship, \* indicates the co-corresponding authorship)
- 3) Dong, X.-R.; Zhang, J.-X.; **Chen, T.-T.**;<sup>\*</sup> Xu, C.-Q.;<sup>\*</sup> Li, J.<sup>\*</sup>, Metal-Centered Boron-Wheel Cluster of Y@B<sub>11</sub><sup>2-</sup> with Rare D<sub>11h</sub> Symmetry. *Inorg. Chem.* **2024**, *63* (14), 6276-6284. (\* indicates the co-corresponding authorship)
- 4) Chen, Q.; Chen, W.-J.; Wu, X.-Y.; **Chen, T.-T.**; Yuan, R.-N.; Lu, H.-G.; Yuan, D.-F.; Li, S.-D.; Wang, L.-S., Investigation of Pb–B Bonding in PbB<sub>2</sub>(BO)<sub>n</sub><sup>-</sup> (n = 0–2): Transformation from Aromatic PbB<sub>2</sub><sup>-</sup> to Pb[B<sub>2</sub>(BO)<sub>2</sub>]<sup>-0</sup> Complexes with B≡B Triple Bonds. *Phys. Chem. Chem. Phys.* **2024**, *26* (6), 5356-5367.

### *Before joining HKUST*

- 5) **Chen, T.-T.**; Du, M.; Yang, Z.; Yuen-Zhou, J.; Xiong, W., Cavity-enabled enhancement of ultrafast intramolecular vibrational redistribution over pseudorotation. *Science* **2022**, *378* (6621), 790-794. DOI: [10.1126/science.add0276](https://doi.org/10.1126/science.add0276) (Perspective on the paper: Chuntunov, L., Using mirrors to control molecular dynamics. *Science* **2022**, *378* (6621), 712-712.)
- 6) Wang, Z.-L.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup> Chen, W.-J.; Li, W.-L.; Zhao, J.; Jiang, X.-L.; Li, J.; Wang, L.-S.; Hu, H.-S., The smallest 4f-metalla-aromatic molecule of cyclo-PrB<sub>2</sub><sup>-</sup> with Pr–B multiple bonds. *Chem. Sci.* **2022**, *13* (34), 10082-10094. (+ indicates the co-first authorship)
- 7) Chen, W.-J.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup> Chen, Q.;<sup>+</sup> Lu, H.-G.; Zhao, X.-Y.; Ma, Y.-Y.; Yan, Q.-Q.; Yuan, R.-N.; Li, S.-D.; Wang, L.-S., Boron-lead multiple bonds in the PbB<sub>2</sub>O<sup>-</sup> and PbB<sub>3</sub>O<sub>2</sub><sup>-</sup> clusters. *Commun. Chem.* **2022**, *5* (1), 25. (+ indicates the co-first authorship)
- 8) **Chen, T.-T.**; Cheung, L. F.; Wang, L.-S., Probing the Nature of the Transition-Metal-Boron Bonds and Novel Aromaticity in Small Metal-Doped Boron Clusters Using Photoelectron Spectroscopy. *Annu. Rev. Phys. Chem.* **2022**, *73* (1), 233-253.
- 9) Li, W.-L.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup> Chen, W.-J.; Li, J.; Wang, L.-S., Monovalent lanthanide(I) in borozene complexes. *Nat. Commun.* **2021**, *12* (1), 6467. (+ indicates the co-first authorship)
- 10) Tian, W.-J.; Chen, W.-J.; Yan, M.; Li, R.; Wei, Z.-H.; **Chen, T.-T.**; Chen, Q.; Zhai, H.-J.; Li, S.-D.; Wang, L.-S., Transition-metal-like bonding behaviors of a boron atom in a boron-cluster boronyl complex [(η<sup>7</sup>-B<sub>7</sub>)-B-BO]<sup>-</sup>. *Chem. Sci.* **2021**, *12* (23), 8157-8164.
- 11) Jiang, Z.-Y.;<sup>+</sup> **Chen, T.-T.**;<sup>+</sup> Chen, W.-J.; Li, W.-L.; Li, J.; Wang, L.-S., Expanded Inverse-Sandwich Complexes of Lanthanum Borides: La<sub>2</sub>B<sub>10</sub><sup>-</sup> and La<sub>2</sub>B<sub>11</sub><sup>-</sup>. *J. Phys. Chem. A* **2021**, *125* (12), 2622-2630. (\* indicates the co-first authorship)
- 12) Chen, W.-J.; Ma, Y.-Y.; **Chen, T.-T.**; Ao, M.-Z.; Yuan, D.-F.; Chen, Q.; Tian, X.-X.; Mu, Y. W.; Li, S.-D.; Wang, L.-S., B<sub>48</sub><sup>-</sup>: a bilayer boron cluster. *Nanoscale* **2021**, *13* (6), 3868-3876.
- 13) Li, W.-L.; **Chen, T.-T.**; Jiang, Z.-Y.; Wang, L.-S.; Li, J., Recent Progresses in the Investigation of Rare-earth Boron Inverse Sandwich Clusters. *Chin. J. Struct. Chem.*, **2020**, *39* (6), 1009-1018.

- 14) **Chen, T.-T.**; Cheung, L. F.; Chen, W.-J.; Cavanagh, J.; Wang, L.-S., Observation of Transition-Metal Boron Triple Bonds in  $\text{IrB}_2\text{O}^-$  and  $\text{ReB}_2\text{O}^-$ . *Angew. Chem. Int. Ed.* **2020**, *59* (35), 15260-15265.
- 15) **Chen, T.-T.**; Li, W.-L.; Chen, W.-J.; Yu, X.-H.; Dong, X.-R.; Li, J.; Wang, L.-S., Spherical Trihedral Metallo-Borosphenes. *Nat. Commun.* **2020**, *11* (1), 2766.
- 16) Cheung, L. F.; **Chen, T.-T.**; Kocheril, G. S.; Chen, W.-J.; Czekner, J.; Wang, L.-S., Observation of Fourfold Boron-Metal Bonds in  $\text{RhB}(\text{BO}^-)$  and  $\text{RhB}$ . *J. Phys. Chem. Lett.* **2020**, *11* (3), 659-663. (+ indicates the co-first authorship)  
**C&EN in Volume 98 Issue 5, 2020, "Boron makes quadruple bond with rhodium"**  
**RhB selected as "C&EN's molecules of the year for 2020"**
- 17) Bai, H.; **Chen, T.-T.**; Chen, Q.; Zhao, X.-Y.; Zhang, Y.-Y.; Chen, W.-J.; Li, W.-L.; Cheung, L. F.; Bai, B.; Cavanagh, J.; Huang, W.; Li, S.-D.; Li, J.; Wang, L.-S., Planar  $\text{B}_{41}^-$  and  $\text{B}_{42}^-$  Clusters with Double-Hexagonal Vacancies. *Nanoscale* **2019**, *11* (48), 23286-23295. (+ indicates the co-first authorship)
- 18) **Chen, T.-T.**; Li, W.-L.; Chen, W.-J.; Li, J.; Wang, L.-S.,  $\text{La}_3\text{B}_{14}^-$ : An Inverse Triple-Decker Lanthanide Boron Cluster. *Chem. Commun.* **2019**, *55* (54), 7864-7867.
- 19) **Chen, T.-T.**; Li, W.-L.; Bai, H.; Chen, W.-J.; Dong, X.-R.; Li, J.; Wang, L.-S.,  $\text{Re}\textcircled{\text{B}}_8^-$  and  $\text{Re}\textcircled{\text{B}}_9^-$ : New Members of the Transition-Metal-Centered Borometallic Molecular Wheel Family. *J. Phys. Chem. A* **2019**, *123* (25), 5317-5324.
- 20) Chen, Q.; **Chen, T.-T.**; Li, H.-R.; Zhao, X.-Y.; Chen, W.-J.; Zhai, H.-J.; Li, S.-D.; Wang, L.-S.,  $\text{B}_{31}^-$  and  $\text{B}_{32}^-$ : Chiral Quasi-Planar Boron Clusters. *Nanoscale* **2019**, *11* (19), 9698-9704. (+ indicates the co-first authorship)
- 21) Li, W.-L.; **Chen, T.-T.**; Jiang, Z.-Y.; Chen, W.-J.; Hu, H.-S.; Wang, L.-S.; Li, J., Probing the Electronic Structure of the  $\text{CoB}_{16}^-$  Drum Complex: Unusual Oxidation State of Co(-I). *Chin. J. Chem. Phys.* **2019**, *31* (2), 241-247. (+ indicates the co-first authorship)
- 22) **Chen, T.-T.**; Li, W.-L.; Li, J.; Wang, L.-S.,  $[\text{La}(\eta^x\text{-B}_x)\text{La}]^-$  ( $x = 7-9$ ): A New Class of Inverse Sandwich Complexes. *Chem. Sci.* **2019**, *10*, 2534-2542.
- 23) Chen, X.; **Chen, T.-T.**; Li, W.-L.; Lu, J.-B.; Zhao, L.-J.; Jian, T.; Hu, H.-S.; Wang, L.-S.; Li, J., Lanthanides with Unusually Low Oxidation States in the  $\text{PrB}_3^-$  and  $\text{PrB}_4^-$  Boride Clusters. *Inorg. Chem.* **2019**, *58* (1), 411-418. (+ indicates the co-first authorship)
- 24) Jian, T.; Cheung, L. F.; **Chen, T.-T.**; Lopez, G. V.; Li, W.-L.; Wang, L.-S., Di-Niobium Gold Clusters: Multiply-Bonded  $\text{Nb}_2$  Dimer Coordinated Equatorially by Au Atoms, *Int. J. Mass Spectrom.* **2018**, *434*, 7-16.
- 25) Li, W.-L.; **Chen, T.-T.**; Xing, D.-H.; Chen, X.; Li, J.; Wang, L.-S., Observation of Highly Stable and Symmetric Lanthanide Octa-Boron Inverse Sandwich Complexes. *Proc. Natl. Acad. Sci. U.S.A.* **2018**, *115* (30), E6972-E6977. (+ indicates the co-first authorship)
- 26) Li, W.-L.; Hu, H.-S.; Zhao, Y.-F.; Chen, X.; **Chen, T.-T.**; Jian, T.; Wang, L.-S.; Li, J., Recent Progress on the Investigations of Boron Clusters and Boron-Based Materials (I): Borophene. *SCI. SINICA Chimica* **2018**, *48* (2), 98-107.
- 27) Li, W.-L.; Chen, X.; Jian, T.; **Chen, T.-T.**; Li, J.; Wang, L.-S., From Planar Boron Clusters to Borophenes and Metalloborophenes. *Nat. Rev. Chem.* **2017**, *1* (10), 0071.
- 28) **Chen, T.-T.**; Li, W.-L.; Jian, T.; Chen, X.; Li, J.; Wang, L.-S.,  $\text{PrB}_7^-$ : A Praseodymium-Doped Boron Cluster with a  $\text{Pr}^{\text{II}}$  Center Coordinated by a Doubly Aromatic Planar  $\eta^7\text{-B}_7^{3-}$  Ligand. *Angew. Chem. Int. Ed.* **2017**, *56* (24), 6916-6920.
- 29) Jian, T.; Cheung, L. F.; Czekner, J.; **Chen, T.-T.**; Lopez, G. V.; Li, W.-L.; Wang, L.-S.,  $\text{Nb}_2\textcircled{\text{Au}}_6$ : A Molecular Wheel with a Short  $\text{Nb}\equiv\text{Nb}$  Triple Bond Coordinated by an  $\text{Au}_6$  Ring and Reinforced by  $\sigma$  Aromaticity. *Chem. Sci.* **2017**, *8* (11), 7528-7536.  
**Highlighted by ChemistryWorld, "Chemists reinvent the wheel"**
- 30) Jian, T.; Cheung, L. F.; **Chen, T.-T.**; Wang, L.-S., Bismuth-Boron Multiple Bonding in  $\text{BiB}_2\text{O}^-$  and  $\text{Bi}_2\text{B}^-$ . *Angew. Chem. Int. Ed.* **2017**, *56* (32), 9551-9555.

- 31) Li, W.-L.; Jian, T.; Chen, X.; Li, H.-R.; **Chen, T.-T.**; Luo, X.-M.; Li, S.-D.; Li, J.; Wang, L.-S., Observation of a Metal-Centered  $B_2-Ta@B_{18}^-$  Tubular Molecular Rotor and a Perfect  $Ta@B_{20}^-$  Boron Drum with the Record Coordination Number of Twenty. *Chem. Commun.* **2017**, 53 (10), 1587-1590.

**Featured on inside front cover of *Chem. Commun.***

- 32) Jian, T.; Li, W.-L.; Chen, X.; **Chen, T.-T.**; Lopez, G. V.; Li, J.; Wang, L.-S., Competition between Drum and Quasi-Planar Structures in  $RhB_{18}^-$ : Motifs for Metallo-Boronanotubes and Metallo-Borophenes. *Chem. Sci.* **2016**, 7 (12), 7020-7027.

- 33) Li, W.-L.; Jian, T.; Chen, X.; **Chen, T.-T.**; Lopez, G. V.; Li, J.; Wang, L.-S., The Planar  $CoB_{18}^-$  Cluster as a Motif for Metallo-Borophenes. *Angew. Chem. Int. Ed.* **2016**, 26 (55), 7358-7363.

**Featured on the Frontispiece of *Angew. Chem. Int. Ed.***

**Editor's highlight in *Nano Res.* 9, 1877-1878 (2016)**

- 34) Li, W.-L.; Liu, H.-T.; Jian, T.; Lopez, G. V.; Piazza, Z. A.; Huang, D.-L.; **Chen, T.-T.**; Su, J.; Yang, P.; Chen, X.; Wang, L.-S.; Li, J., Bond-Bending Isomerism of  $Au_2I_3^-$ : Competition between Covalent Bonding and Auophilicity. *Chem. Sci.* **2016**, 7 (1), 475-481.

**Highlighted by ChemistryWorld, "Gold cluster bends between two isomers"**