TEXAS STATE VITA

I. Academic/Professional Background

A. Name and Title

Name: Dr. Wenting Cai Title: Assistant Professor

B. Educational Background

Degree	*Year*	*University*	*Major*	*Thesis/Dissertation*
PHD	2015	Huazhong Ctrl China U Sci & Tech	Materials Science and Engineering	
MENG	2011	Xi'an Shiyou University	Materials Science	
BENG	2008	Xi'an Shiyou University	Materials Physics	

C. University Experience

Position	*University*	*Comments*	*Dates*
Assistant Professor, Department of Chemistry and Biochemistry	Texas State University. San Marcos, TX, United States		September 1, 2024 - Present
Associate Professor, Department of Chemistry	Xi'an Jiaotong University. Xi'an, China		June 28, 2021 - June 28, 2024
Visiting Research Scholar, Alan G. MacDiarmid NanoTech Institute	The University of Texas at Dallas. Dallas, TX, United States		September 1, 2019 - May 31, 2021
Post-Doctoral Researcher, Department of Chemistry	The University of Texas at El Paso. El Paso, TX, United States		August 1, 2015 - August 31, 2019

II. TEACHING

B. Courses Taught:

Texas State University:

CHEM 1341 - GENERAL CHEMISTRY I

CHEM 4299 - UNDG RESEARCH

III. SCHOLARLY/CREATIVE

A. Works in Print (including works accepted, forthcoming, in press):

2. Articles:

a. Refereed Journal Articles:

Li, Y., Liu, L., Lv, J., Wang, X., Cai, W., & Shen, W. (2025). Recent advances in oxygen reduction reaction catalysis under neutral conditions. *Chemical Communications*. Published. https://doi.org/10.1039/d5cc04010h
http://dx.doi.org/10.1039/d5cc04010h
Chemical Communications-2025-1.pdf

Lin, Y., Lin, Z., Lv, S., Shui, Y., Zhu, W., Zhang, Z., … Liang, C. (2025). A Nd@C82-polymer interface for efficient and stable perovskite solar cells. *Nature*. Published. https://doi.org/10.1038/s41586-025-08961-9
https://doi.org/10.1038/s41586-025-08961-9
Nature-2025-1.pdf

Zhang, M., Fang, S., Cai, W., Huynh, C., Göktepe, F., Oh, J., … Baughman, R. H. (2025). Mandrel-free fabrication of giant spring-index and stroke muscles for diverse applications. *Science*, *387*(6738), 1101–1108. https://doi.org/10.1126/science.adr6708
https://doi.org/10.1126/science.adr6708
Science-2025-1.pdf

Wang, D., Shen, W., Li, M., Zhang, M., Mu, J., & Cai, W. (2024). Advancements in endohedral metallofullerenes: novel metal–cage interactions driving new phenomena and emerging applications. *Chemical Communications*, *60*(99), 14733–14749. https://doi.org/10.1039/d4cc04341c
https://doi.org/10.1039/d4cc04341c
Review-ChemComm-2024-1.pdf

Yang, L., Zhang, Y., Cai, W., Tan, J., Hansen, H., Wang, H., … Mu, J. (2024). Electrochemically-driven actuators: from materials to mechanisms and from performance to applications. *Chemical Society Reviews*, *53*(11), 5956–6010. https://doi.org/10.1039/d3cs00906h https://doi.org/10.1039/d3cs00906h

Cai, W., Zhang, M., Echegoyen, L., & Lu, X. (2023). Recent advances in endohedral metallofullerenes. *Fundamental Research*. Published. https://doi.org/10.1016/j.fmre.2023.12.004
https://doi.org/10.1016/j.fmre.2023.12.004

Zhang, M., Cai, W., Wang, Z., Fang, S., Zhang, R., Lu, H., … Baughman, R. H. (2023). Mechanical energy harvesters with tensile efficiency of 17.4% and torsional efficiency of 22.4% based on homochirally plied carbon nanotube yarns. *Nature Energy*, *8*(2), 203–213. https://doi.org/10.1038/s41560-022-01191-7 https://doi.org/10.1038/s41560-022-01191-7

Wang, Z., Mun, T. J., Machado, F. M., Moon, J. H., Fang, S., Aliev, A. E., … Baughman, R. H. (2022). More Powerful Twistron Carbon Nanotube Yarn Mechanical Energy Harvesters. *Advanced Materials*, *34*(27). https://doi.org/10.1002/adma.202201826 https://doi.org/10.1002/adma.202201826

Cai, W., Bocarsly, J. D., Gomez, A., Letona Lee, R. J., Metta-Magaña, A., Seshadri, R., & Echegoyen, L. (2020). High blocking temperatures for DyScS endohedral fullerene single-molecule magnets. *Chemical Science*, *11*(48), 13129–13136. https://doi.org/10.1039/d0sc05265e https://doi.org/10.1039/d0sc05265e

Cai, W., Alvarado, J., Metta-Magaña, A., Chen, N., & Echegoyen, L. (2020). Interconversions between Uranium Mono-metallofullerenes: Mechanistic Implications and Role of Asymmetric Cages. *Journal of the American Chemical Society*, *142*(30), 13112–13119. https://doi.org/10.1021/jacs.0c04888 https://doi.org/10.1021/jacs.0c04888

Wang, Y., Morales-Martínez, R., Cai, W., Zhuang, J., Yang, W., Echegoyen, L., … Chen, N. (2019). Th@C_1(11)-C_{86}: an actinide encapsulated in an unexpected C_{86} fullerene cage. *Chemical Communications*, *55*(63), 9271–9274. https://doi.org/10.1039/c9cc04613e https://doi.org/10.1039/c9cc04613e

Cai, W., Chen, C.-H., Chen, N., & Echegoyen, L. (2019). Fullerenes as Nanocontainers That Stabilize Unique Actinide Species Inside: Structures, Formation, and Reactivity. *Accounts of Chemical Research*, *52*(7), 1824–1833. https://doi.org/10.1021/acs.accounts.9b00229 https://doi.org/10.1021/acs.accounts.9b00229

Cai, W., Abella, L., Zhuang, J., Zhang, X., Feng, L., Wang, Y., … Chen, N. (2018). Synthesis and Characterization of Non-Isolated-Pentagon-Rule Actinide Endohedral Metallofullerenes U@C_1(17418)-C_{76}, U@C_1(28324)-C_{80}, and Th@C_1(28324)-C_{80}: Low-Symmetry Cage Selection Directed by a Tetravalent Ion. *Journal of the American Chemical Society*, *140*(51), 18039–18050. https://doi.org/10.1021/jacs.8b10435 https://doi.org/10.1021/jacs.8b10435

Cai, W., Murillo, J., & Echegoyen, L. (2017). Endohedral Clusterfullerenes: Future Perspectives. *ECS Journal of Solid State Science and Technology*,

6(6), M3031–M3034. https://doi.org/10.1149/2.0081706jss https://doi.org/10.1149/2.0081706jss

Cai, W., Morales-Martínez, R., Zhang, X., Najera, D., Romero, E. L., Metta-Magaña, A., … Echegoyen, L. (2017). Single crystal structures and theoretical calculations of uranium endohedral metallofullerenes ($U@C_{2n}$, 2n = 74, 82) show cage isomer dependent oxidation states for U. *Chemical Science*, *8*(8), 5282–5290. https://doi.org/10.1039/c7sc01711a https://doi.org/10.1039/c7sc01711a

Zhao, S., Zhao, P., Cai, W., Bao, L., Chen, M., Xie, Y., … Lu, X. (2017). Stabilization of Giant Fullerenes $C_2(41)$-C_{90}, $D_3(85)$-C_{92}, $C_1(132)$-C_{94}, $C_2(157)$-C_{96}, and $C_1(175)$-C_{98} by Encapsulation of a Large La_2C_2 Cluster: The Importance of Cluster–Cage Matching. *Journal of the American Chemical Society*, *139*(13), 4724–4728. https://doi.org/10.1021/jacs.6b11970 https://doi.org/10.1021/jacs.6b11970

Cai, W., Li, F.-F., Bao, L., Xie, Y., & Lu, X. (2016). Isolation and Crystallographic Characterization of $La_2C_2@C_s(574)$-C_{102} and $La_2C_2@C_2(816)$-C_{104}: Evidence for the Top-Down Formation Mechanism of Fullerenes. *Journal of the American Chemical Society*, *138*(20), 6670–6675. https://doi.org/10.1021/jacs.6b03934 https://doi.org/10.1021/jacs.6b03934

Chen, M., Shen, W., Bao, L., Cai, W., Xie, Y., Akasaka, T., & Lu, X. (2015). Regioselective Thermal Reaction between Triethylamine and C_{60} Revisited: Xray Confirmation of the PentaneFused Adduct and in Situ Mechanism Study. *European Journal of Organic Chemistry*, *2015*(26), 5742–5746. https://doi.org/10.1002/ejoc.201500814 https://doi.org/10.1002/ejoc.201500814

Cai, W., Bao, L., Zhao, S., Xie, Y., Akasaka, T., & Lu, X. (2015). Anomalous Compression of $D_5(450)$-C_{100} by Encapsulating La_2C_2 Cluster instead of La_2. *Journal of the American Chemical Society*, *137*(32), 10292–10296. https://doi.org/10.1021/jacs.5b05668 https://doi.org/10.1021/jacs.5b05668

Cai, W., Chen, M., Bao, L., Xie, Y., Akasaka, T., & Lu, X. (2015). InDepth Understanding of the Chemical Properties of Rarely Explored Carbide Cluster Metallofullerenes: A Case Study of $Sc_2C_2@C_{3v}(8)C_{82}$ that Reveals a General Rule. *Chemistry – A European Journal*, *21*(8), 3449–3454. https://doi.org/10.1002/chem.201405493 https://doi.org/10.1002/chem.201405493

Liu, B., Fang, H., Li, X., Cai, W., Bao, L., Rudolf, M., … Guldi, D. M. (2015). Synthesis and Photophysical Properties of a $Sc_3N@C_{80}$Corrole Electron Donor–Acceptor Conjugate. *Chemistry – A European Journal*, *21*(2),

746–752. https://doi.org/10.1002/chem.201405572 https://doi.org/10.1002/chem.201405572

Liu, B., Cong, H., Li, X., Yu, B., Bao, L., Cai, W., … Lu, X. (2014). Highly regioselective 1,3-dipolar cycloaddition of diphenylnitrilimine to $Sc_3N@I_h$-C_{80} affording a very stable, unprecedented pyrazole-ring fused derivative of endohedral metallofullerenes. *Chem. Commun.*, *50*(84), 12710–12713. https://doi.org/10.1039/c4cc06134a https://doi.org/10.1039/c4cc06134a

Zhou, Q., Li, H., Lian, Y., Suzuki, M., Bao, L., Cai, W., … Akasaka, T. (2014). Regioselective synthesis and molecular structure of the first derivative of praseodymium-containing metallofullerenes. *Chem. Commun.*, *50*(69), 9876–9878. https://doi.org/10.1039/c4cc02949f https://doi.org/10.1039/c4cc02949f

Ruan, J., Xie, Y., Cai, W., Slanina, Z., Mizorogi, N., Nagase, S., … Lu, X. (2014). Chemical Properties of Divalent Metallofullerenes Yb@D_{3h}(1)-C_{74} and Yb@C_2(13)-C_{84}. *Fullerenes, Nanotubes and Carbon Nanostructures*, *22*(1-3), 138–146. https://doi.org/10.1080/1536383x.2013.794344 https://doi.org/10.1080/1536383x.2013.794344

Zhang, W., Suzuki, M., Xie, Y., Bao, L., Cai, W., Slanina, Z., … Lu, X. (2013). Molecular Structure and Chemical Property of a Divalent Metallofullerene Yb@C_2(13)-C_{84}. *Journal of the American Chemical Society*, *135*(34), 12730–12735. https://doi.org/10.1021/ja405223t https://doi.org/10.1021/ja405223t

Xie, Y., Suzuki, M., Cai, W., Mizorogi, N., Nagase, S., Akasaka, T., & Lu, X. (2013). Highly Regioselective Addition of Adamantylidene Carbene to Yb@C_{2v}(3)C_{80} to Afford the First Derivative of Divalent Metallofullerenes. *Angewandte Chemie International Edition*, *52*(19), 5142–5145. https://doi.org/10.1002/anie.201210164 https://doi.org/10.1002/anie.201210164

B. Works Not in Print:

2. Invited Talks, Lectures, and Presentations:

Cai, W. (Presenter), MSEC Seminar and Commercialization Forum, "Synthetic carbon allotropes: fundamental chemistry insights and promising applications," MSEC, Texas State University, San Marcos, TX, United States. (March 7, 2025). Abstract-Wenting-1.pdf

Cai, W. (Presenter), Department seminar, "Synthetic carbon allotropes: fundamental chemistry insights and promising applications," The Department of Chemistry and Biochemistry, Texas State University, San Marcos, TX, United States. (November 18, 2024).

CaiFlyer-1.pdf

5. Other Works not in Print:

b. Works "in progress":

Book Chapters:

Cai, W. (In Preparation; Not Yet Submitted). Advanced Crystallographic Study of the Structures of Endohedral Metallofullerenes.

c. Other Works Not in Print:

Patents:

Baughman, Ray, Wang, Zhong, Zhang, Mengmeng, Cai, Wenting, Fang, Shaoli, Kim, Seon Jeong, Mun, Tae Jin, Moon, Ji Hwan. "Nanofiber yarns for electrochemically harvesting electrical energy from mechanical deformation". United States. Number / ID: 18531438. (Date of Application: 2023).

C. Scholarly / Creative Grants and Contracts:

2. Submitted, but not Funded, External Grants and Contracts:

Cai, Wenting. Single-Molecule Magnetism in Uranium-Containing Clusterfullerenes, Private / Foundation / Corporate, $350,526.00. (Submitted: December 2025). Grant.
Welch-1.pdf

Cai, Wenting. CAREER: Novel Magnetic Nd-EMFs: Chemical Mechanisms, Properties, and Energy Device Applications, Federal, $796,356.00. (Submitted: July 2025). Grant.
NSF CAREER-1.pdf

4. Submitted, but not Funded, Internal Grants and Contracts:

Cai, Wenting. The Application of Nd-EMFs for Use in High-Efficiency Perovskite Solar Cells, Texas State University, $12,000.00. (Submitted: September 2025). Grant.
REP-1.pdf

F. Media Recognition:

Newspaper, Newsroom-Texas State University. (April 16, 2025).
Newsroom-Texas State University-1.pdf
Additional Comments: https://news.txst.edu/research-and-innovation/2025/txst-researchers-develop-method-to-produce-artificial-muscles.html

IV. SERVICE

A. Institutional

2. College:

Member, STEM Communities Learning Assistant Program. (2025 - Present).

B. Professional:

Editor, Molecules. (2025 - Present).
Guest Editor Invitation Letter-1.pdf

Reviewer / Referee, ECS Advances. (2025 - Present).
Peer review for ECS Advances-1.jpeg

Reviewer / Referee, The Innovation Materials. (November 6, 2024 - December 6, 2024).