Kenta Kawashima (as of Jul. 14, 2025)

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Education

Ph.D. Chemistry, The University of Texas at Austin (UT Austin) Jul. 2017 – Jun. 2025 (passed defense on Jun. 3, 2025)
Dissertation: *Advanced electrochemical materials for sustainable energy conversion and storage*

M.Eng. Environmental Science and Technology, Shinshu University Apr. 2014 – Mar. 2016
Thesis: *Effects of direct flux growth and tungsten on phase formation, morphology evolution and photocatalytic water oxidation activity of $LaTiO_2N$ crystals*

B.Eng. Environmental Science and Technology, Shinshu University Apr. 2010 – Mar. 2014
Thesis: *Flux growth of lanthanum titanium oxide and oxynitride*

Fellowships, Grants, & Awards

Individual Research Fellowships

- Ethel Gene Kahmer Endowed Presidential Fellowship, *UT Austin*, US (May **2024**).
- University Graduate Continuing Fellowship for 2021–2022, *UT Austin*, US (Mar. **2021**).
- University of Texas at Austin Graduate School Summer 2020 Fellowship, *UT Austin*, US (Apr. **2020**).
- Graduate Research Fellowship, *UT Austin*, US (Aug. **2017**).
- Exemption from Refund for Outstanding Performance, *Japan Student Services Organization (JASSO)*, Japan (May **2016**).

Travel Grants

- 2025 Next Generation Electrochemistry (NGenE) Workshop, *Argonne National Laboratory*, US (Apr. **2025**).
- Texas Section Travel Grant, *The Electrochemical Society*, US (Aug. **2024**).
- Crystals 2024 Travel Award, *MDPI*, Switzerland (May **2024**). [Link]
- CEC Conference Travel Grant, *The Center for Electrochemistry*, UT Austin, US (May **2024**).
- Texas Section Travel Grant, *The Electrochemical Society*, US (Apr. **2024**).
- Texas Section Travel Grant, *The Electrochemical Society*, US (Aug. **2023**).
- Professional Development Award (Travel Grant), *UT Austin*, US (Feb. **2023**).

Other Awards

- Henze Teaching Award, *UT Austin*, US (Jul. **2024**).
- Chemistry Department Graduate Student Excellence Award, *UT Austin*, US (Feb. **2021**).
- Faraday Teaching Award, *UT Austin*, US (Nov. **2019**).
- Environmental Science and Technology Award, *Shinshu University*, Japan (Mar. **2016**).
- Chemical Society of Japan Tokai Branch Chief Award, *The Chemical Society of Japan*, Japan (Mar. **2016**).
- Outstanding Academic Achiever in the Third Year at the Dept. of Environ. Sci. Technol., *Shinshu University*, Japan (Apr. **2012**).
- Outstanding Academic Achiever in the Second Year at the Dept. of Environ. Sci. Technol., *Shinshu University*, Japan (Apr. **2011**).

Research Experience

Mullins Research Group, UT Austin Oct. 2016 – present

Research Assistant, Advisor, Prof. C. Buddie Mullins

Link: https://sites.utexas.edu/mullins/

In the Mullins group, we focused on electrocatalytic materials, including transition metal carbides, pnictides, and chalcogenides, for the hydrogen and oxygen evolution reactions (HER and OER). Our work involved synthesizing and characterizing electrocatalysts, performing electrochemical tests, and conducting post-characterization analyses. Collaborating with the Henkelman group and the Wang group at UT Austin, we integrated theoretical insights into our research. Recently, we have been intensively investigating electrocatalytic material transformations using advanced in situ techniques, including online inductively coupled plasma mass spectrometry (in collaboration with the Jaramillo group at Stanford) and Raman spectroelectrochemistry.

- Investigating (photo)electrocatalysts for the HER and OER.
- Characterizing (photo)electrocatalytic materials using a variety of instruments and techniques.
- Discovering and optimizing (photo)electrocatalytic materials with favorable designs (e.g., sizes, morphologies).
- Designing and 3D printing electrochemical cells for in situ analysis (e.g., Raman spectroscopy).

Oishi · Teshima Laboratory, Shinshu University Oct. 2012 – Mar. 2016

Research Assistant, Advisor: Prof. Katsuya Teshima

Link: https://www.shinshu-u.ac.jp/faculty/engineering/chair/teshima_lab/index.html

In the Oishi·Teshima group, we collaborated with the Domen group at the University of Tokyo to study oxynitride-based photocatalysts (powder-type) for efficient overall water splitting using solar energy. In this project, we (1) synthesized inorganic crystalline materials (ceramics) via the flux (molten salt) method, (2) characterized the resulting crystalline samples using various analytical instruments and techniques, and (3) evaluated their photocatalytic water splitting activity in a closed-circulation system, utilizing simulated solar light and gas chromatography.

- Synthesizing inorganic crystalline materials (ceramics) using the flux method (molten salt technique).
- Characterizing the flux-grown crystals with a range of analytical instruments and techniques.
- Investigating the photocatalytic water splitting activity of the flux-grown crystals in a closed-circulation system.

Publications (Total # of Publications: 62; Total # of First-author Publications: 18; Citations: 3104; Google Scholar Link)

From Work at UT Austin

Electrocatalysis

1. **Kenta Kawashima**, Antony Elvin Fernando Milton, John S. Archer, Daniel T. Collins, Nicolas Lorenzo Serrat, Chikaodili E. Chukwuneke, Raúl A. Márquez, Lettie A. Smith, C. Buddie Mullins, "Incidental and Intentional Transformation: Transition Metal Pnictide and Chalcogenide Electrocatalysts for Alkaline Hydrogen Evolution," *ACS Energy Lett.*, **9**, 6126–6143 (**2024**). https://doi.org/10.1021/acsenergylett.4c02182
2. **Kenta Kawashima**,† Raúl A. Márquez,† Lettie A. Smith, Rinish Reddy Vaidyula, Omar A. Carrasco-Jaim, Ziqing Wang, Yoon Jun Son, Chi L. Cao, C. Buddie Mullins, "A Review of Transition Metal Boride, Carbide, Pnictide, and Chalcogenide Water Oxidation Electrocatalysts," *Chem. Rev.*, **123**, 12795–13208 (**2023**). https://doi.org/10.1021/acs.chemrev.3c00005

† The authors contributed equally to the work.

3. **Kenta Kawashima**, Raúl A. Márquez, Yoon Jun Son, Clarissa Guo, Rinish Reddy Vaidyula, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, "Accurate Potentials of Hg/HgO Electrodes: Practical Parameters for Reporting Alkaline Water Electrolysis Overpotentials," *ACS Catal.*, **13**, 1893–1898 (**2023**). https://doi.org/10.1021/acscatal.2c05655

4. **Kenta Kawashima**, Raúl A. Márquez-Montes, Hao Li, Kihyun Shin, Chi L. Cao, Kobe M. Vo, Yoon Jun Son, Bryan R. Wygant, Adithya Chunangad, Duck Hyun Youn, Graeme Henkelman, Víctor H. Ramos-Sánchez, C. Buddie Mullins, "Electrochemical Behavior of a Ni_3N OER Precatalyst in Purified Alkaline Media: The Impacts of Self-Oxidation and Iron Incorporation," *Mater. Adv.*, **2**, 2299–2309 (**2021**). https://doi.org/10.1039/D1MA00130B

5. **Kenta Kawashima**, Chi L. Cao, Hao Li, Raúl A. Márquez-Montes, Bryan R. Wygant, Yoon Jun Son, Joseph V. Guerrera, Graeme Henkelman, C. Buddie Mullins, "Evaluation of a V_8C_7 Anode for Oxygen Evolution in Alkaline Media: Unusual Morphological Behavior," *ACS Sustainable Chem. Eng.*, **8**, 14101–14108 (**2020**). https://doi.org/10.1021/acssuschemeng.0c04759

6. **Kenta Kawashima**, Kihyun Shin, Bryan R. Wygant, Jun-Hyuk Kim, Chi L. Cao, Jie Lin, Yoon Jun Son, Yang Liu, Graeme Henkelman, C. Buddie Mullins, "Cobalt Metal–Cobalt Carbide Composite Microspheres for Water Reduction Electrocatalysis," *ACS Appl. Energy Mater.*, **3**, 3909–3918 (**2020**). https://doi.org/10.1021/acsaem.0c00321

7. **Kenta Kawashima**, Yang Liu, Jun-Hyuk Kim, Bryan R. Wygant, Isabelle Cheng, Hugo Celio, Oluwaniyi Mabayoje, Jie Lin, C. Buddie Mullins, "Infrared Light-Driven $LaW(O,N)_3$ OER Photoelectrocatalysts from Chloride-Flux Grown $La_4W_3O_{15}$ Templating Precursors," *ACS Appl. Energy Mater.*, **2**, 913–922 (**2019**). https://doi.org/10.1021/acsaem.8b02088

8. **Kenta Kawashima**,† Jun-Hyuk Kim,† Isabelle Cheng, Kunio Yubuta, Kihyun Shin, Yang Liu, Jie Lin, Graeme Henkelman, C. Buddie Mullins, "Chloride Flux Growth of Idiomorphic AWO_4 (*A* = Sr, Ba) Single Microcrystals," *Cryst. Growth Des.*, **18**, 5301–5310 (**2018**). https://doi.org/10.1021/acs.cgd.8b00757

9. **Kenta Kawashima**, Mirabbos Hojamberdiev, Kunio Yubuta, Oluwaniyi Mabayoje, Bryan R. Wygant, C. Buddie Mullins, Kazunari Domen, Katsuya Teshima, "NH_3-Assisted Chloride Flux-Coating Method for Direct Fabrication of Visible-Light-Responsive $SrNbO_2N$ Crystal Layers," *CrystEngComm*, **19**, 5532–5541 (**2017**). https://doi.org/10.1039/c7ce00614d

10. Jun-Hyuk Kim,† **Kenta Kawashima**,† Bryan R. Wygant, Oluwaniyi Mabayoje, Yang Liu, Joy H. Wang, C. Buddie Mullins, "Transformation of a Cobalt Carbide (Co_3C) Oxygen Evolution Precatalyst," *ACS Appl. Energy Mater.*, **1**, 5145–5150 (**2018**). https://doi.org/10.1021/acsaem.8b01336

11. Lettie A. Smith, J. Ehren Eichler, **Kenta Kawashima**, Hanah Leonard, Franklin Tang, Ethan Kang Yang, Wuilian A. Martinez, Yasaman Karbalaeemorad, C. Buddie Mullins, "Dual Alkali-Carbonate Activated Nitrogen-Doped Carbons as Oxygen Reduction Reaction Electrocatalysts: A Study of Porosity Structure Effects," submitted to *J. Mater. Chem. A* (**2025**).

12. Chikaodili E. Chukwuneke, **Kenta Kawashima**, Tran Phuoc Anh Nguyen, Gabriella Ruiz, Johnpaul Smith, Raul A. Marquez, Jay T. Bender, Xun Zhan, Delia J. Milliron, Michael J. Rose, C. Buddie Mullins, "Doping and Nitridation Effects on Nickel-based MOF for Water Oxidation," submitted to *Adv. Funct. Mater.* (**2025**).

13. Raul A. Marquez, Jay T. Bender, Ashton M. Aleman, Emma Kalokowski, Thuy Vy Le, Chloe Williamson, Morten Linding Frederiksen, **Kenta Kawashima**, Chikaodili E. Chukwuneke, Andrei Dolocan, Michaela Burke Stevens, Delia J. Milliron, Joaquin Resasco, Thomas F. Jaramillo, C. Buddie Mullins, "Insights into Catalyst Degradation During Water Electrolysis Under Variable Operation," accepted by *Energy Environ. Sci.* (**2025**).

† The authors contributed equally to the work.

https://doi.org/10.1039/D5EE02194D

14. Lettie A. Smith, **Kenta Kawashima**, Raul A. Marquez, C. Buddie Mullins, “A Perspective on Protective Carbon Shells for Improved Stability of Alkaline Water Oxidation Electrocatalysts,” *ACS Materials Lett.*, **6**, 3190–3201 (**2024**). https://doi.org/10.1021/acsmaterialslett.4c00688

15. Raul A. Marquez, Erin Elizabeth Oefelein, Thuy Vy Le, **Kenta Kawashima**, Lettie A. Smith, C. Buddie Mullins, “Redefining the Stability of Water Oxidation Electrocatalysts: Insights from Materials Databases and Machine Learning,” *ACS Materials Lett.*, **6**, 2905–2918 (**2024**). https://doi.org/10.1021/acsmaterialslett.4c00544

16. Raul A. Marquez, Michael Espinosa, Emma Kalokowski, Yoon Jun Son, **Kenta Kawashima**, Thuy Vy Le, Chikaodili E. Chukwuneke, C. Buddie Mullins, “A Guide to Electrocatalyst Stability Using Lab-Scale Alkaline Water Electrolyzers,” *ACS Energy Lett*., **9**, 547–555 (**2024**). https://doi.org/10.1021/acsenergylett.3c02758

17. Raul A. Marquez, Emma Kalokowski, Michael Espinosa, Jay T. Bender, Yoon Jun Son, **Kenta Kawashima**, Chikaodili E. Chukwuneke, Hugo Celio, Andrei Dolocan, Xun Zhan, Nathaniel Miller, Delia J. Milliron, Joaquin Resasco, C. Buddie Mullins, "Transition Metal Incorporation: Electrochemical, Structure, and Chemical Effects on Nickel Oxyhydroxide Oxygen-Evolution Electrocatalysts," *Energy Environ. Sci.*, **17**, 2028–2045 (**2024**). https://doi.org/10.1039/D3EE03617K

18. Chikaodili Chukwuneke, **Kenta Kawashima**, Hao Li, Raul A. Marquez, Yoon Jun Son, Lettie A. Smith, Hugo Celio, Graeme Henkelman, C. Buddie Mullins, “Electrochemically Engineered Domain: Nickel–Hydroxide/Nickel Nitride Composite for Alkaline HER Electrocatalysis,” *J. Mater. Chem. A*, **12**, 1654–1661 (**2024**). https://doi.org/10.1039/D3TA06408E

19. Yoon Jun Son, Raul A. Marquez, **Kenta Kawashima**, Lettie A. Smith, Chikaodili E. Chukwuneke, Jerome Babauta, C. Buddie Mullins, “Navigating *iR* Compensation: Practical Considerations for Accurate Study of Oxygen Evolution Catalytic Electrodes,” *ACS Energy Lett*., **8**, 4323–4329 (**2023**). https://doi.org/10.1021/acsenergylett.3c01658

20. Yoon Jun Son, **Kenta Kawashima**, Raúl A. Márquez, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, “Key Concepts for Understanding Alkaline Oxygen Evolution Reaction at the Atomic/Molecular Scale,” *Curr. Opin. Electrochem.*, **39**, 101298 (**2023**). https://doi.org/10.1016/j.coelec.2023.101298

21. Raúl A. Márquez, **Kenta Kawashima**, Yoon Jun Son, Grace Castelino, Nathaniel Miller, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, “Getting the Basics Right: Preparing Alkaline Electrolytes for Electrochemical Applications,” *ACS Energy Lett*., **8**, 1141–1146 (**2023**). https://doi.org/10.1021/acsenergylett.2c02847

22. Raúl A. Márquez-Montes, **Kenta Kawashima**, Yoon Jun Son, Roger Rose, Lettie A. Smith, Nathaniel R. Miller, Omar Ali Carrasco Jaim, Hugo Celio, C. Buddie Mullins, “Tailoring 3D-printed Electrodes for Enhanced Water Splitting,” *ACS Appl. Mater. Interfaces*, **14**, 42153–42170 (**2022**). https://doi.org/10.1021/acsami.2c12579

23. Yoon Jun Son, Seonwoo Kim, Vanessa Leung, **Kenta Kawashima**, Jungchul Noh, Kihoon Kim, Raul A. Marquez-Montes, Omar A. Carrasco-Jaim, Lettie A. Smith, Hugo Celio, Delia J. Milliron, Brian A. Korgel, C. Buddie Mullins, “Effects of Electrochemical Conditioning on Nickel-Based Oxygen Evolution Electrocatalysts,” *ACS Catal.*, **12**, 10384–10399 (**2022**). https://doi.org/10.1021/acscatal.2c01001

24. Ramacharyulu V. R. K. Peesapati, Yong Ho Lee, **Kenta Kawashima**, Duck Hyun Youn, Jun-Hyuk Kim, Bryan R. Wygant, C. Buddie Mullins, Chang Woo Kim, “Phase Transition Induced Photocathodic p-$CuFeO_2$ Nanocolumnar Film by Reactive Ballistic Deposition,” *New J. Chem.*, **46**, 1238–1245 (**2022**). https://doi.org/10.1039/D1NJ04656J

25. Raul A. Marquez-Montes, **Kenta Kawashima**, Yoon Jun Son, H. Hohyun Sun, Hugo Celio, Víctor H. Ramos-Sánchez, C. Buddie Mullins, “Mass Transport-Enhanced Electrodeposition of Amorphous Ni–S–P–O Films on Nickel Foam for Electrochemical Water Splitting,” *J. Mater. Chem. A*, **9**, 7736–7749 (**2021**). https://doi.org/10.1039/D0TA12097A

26. Sang Heon Park, Tae Hwan Jo, Min Hee Lee, **Kenta Kawashima**, Hyung-Kyu Lim, Duck Hyun Youn, C. Buddie Mullins, "Highly Active and Stable Nickel-Molybdenum Nitride (Ni_2Mo_3N) Electrocatalyst for Hydrogen Evolution," *J. Mater. Chem. A*, **9**, 4945–4951 (**2021**). https://doi.org/10.1039/D0TA10090K

27. Yoon Jun Son, **Kenta Kawashima**, Bryan R. Wygant, Chon Hei Lam, James N. Burrow, Hugo Celio, Andrei Dolocan, John G. Ekerdt, C. Buddie Mullins, "Anodized Nickel Foam for Oxygen Evolution Reaction in Fe-free and Unpurified Alkaline Electrolytes at High Current Densities," *ACS Nano*, **15**, 3468–3480 (**2021**). https://doi.org/10.1021/acsnano.0c10788

28. Keke Wang,† Yang Liu,† **Kenta Kawashima**, Xuetao Yang, Xiang Yin, Faqi Zhan, Min Liu, Xiaoqing Qiu, Wenzhang Li, C. Buddie Mullins, Jie Li, "Modulating Charge Transfer Efficiency of Hematite Photoanode with Hybrid Dual-Metal–Organic Frameworks for Boosting Photoelectrochemical Water Oxidation," *Adv. Sci.*, **7**, 2002563 (**2020**). https://doi.org/10.1002/advs.202002563

29. Raúl A. Márquez-Montes, **Kenta Kawashima**, Kobe M. Vo, David Chávez-Flores, Virginia H. Collins-Martínez, C. Buddie Mullins, Víctor H. Ramos-Sánchez, "Simultaneous sulfite electrolysis and hydrogen production using Ni foam-based three-dimensional electrodes," *Environ. Sci. Tech.*, **54**, 12511–12520 (**2020**). https://doi.org/10.1021/acs.est.0c04190

30. Julie C Fornaciari, Darinka Primc, **Kenta Kawashima**, Bryan R. Wygant, Sumit Verma, Leonardo Spanu, C. Buddie Mullins, Alexis T. Bell, Adam Z. Weber, "A Perspective on the Electrochemical Oxidation of Methane to Methanol in Membrane Electrode Assemblies," *ACS Energy Lett.*, **5**, 2954–2963 (**2020**). https://doi.org/10.1021/acsenergylett.0c01508

31. Xiang Yin, Jie Li, Libo Du, Faqi Zhan, **Kenta Kawashima**, Wenzhang Li, Weixin Qiu, Yang Liu, Xuetao Yang, Keke Wang, C. Buddie Mullins, "Boosting Photoelectrochemical Performance of $BiVO_4$ through Photoassisted Self-Reduction," *ACS Appl. Energy Mater.*, **3**, 4403–4410 (**2020**). https://doi.org/10.1021/acsaem.0c00109

32. Oluwaniyi Mabayoje, Samuel G. Dunning, **Kenta Kawashima**, Bryan R. Wygant, Ryan A. Cuifo, Simon M. Humphrey, C. Buddie Mullins, "Hydrogen Evolution by Ni_2P Catalysts Derived from Phosphine MOFs," *ACS Appl. Energy Mater.*, **3**, 176–183 (**2020**). https://doi.org/10.1021/acsaem.9b02109

33. Yang Liu, Bryan R. Wygant, **Kenta Kawashima**, Oluwaniyi Mabayoje, Jun-Hyuk Kim, Tae Eun Hong, Sang-Geul Lee, Kunio Yubuta, Jie Lin, Wenzhang Li, Jie Li, C. Buddie Mullins, "Facet Effect on the Photoelectrochemical Performance of a $WO_3/BiVO_4$ Heterojunction Photoanode," *Appl. Catal. B.*, **245**, 227–239 (**2019**). https://doi.org/10.1016/j.apcatb.2018.12.058

34. Bryan R. Wygant, **Kenta Kawashima**, C. Buddie Mullins, "Catalyst or Pre-Catalyst? The Effect of Oxidation on Transition Metal Carbide, Pnictide, and Chalcogenide Oxygen Evolution Catalysts," *ACS Energy Lett.*, **3**, 2956–2966 (**2018**). https://doi.org/10.1021/acsenergylett.8b01774

35. Jun-Hyuk Kim, Kihyun Shin, **Kenta Kawashima**, Duck Hyun Youn, Jie Lin, Tae Eun Hong, Yang Liu, Bryan R. Wygant, Joy Wang, Graeme Henkelman, C. Buddie Mullins, "Enhanced Activity Promoted by CeO_x on a CoO_x Electrocatalyst for the Oxygen Evolution Reaction," *ACS Catal.*, **8**, 4257–4265 (**2018**). https://doi.org/10.1021/acscatal.8b00820

36. Yang Liu, Bryan R. Wygant, Oluwaniyi Mabayoje, Jie Lin, **Kenta Kawashima**, Jun-Hyuk Kim, Wenzhang Li, Jie Li, C. Buddie Mullins, "Interface Engineering and its Effect on WO_3-Based Photoanode and Tandem Cell," *ACS Appl. Mater. Interfaces*, **10**, 12639–12650 (**2018**). https://doi.org/10.1021/acsami.8b00304

37. Jun-Hyuk Kim, Duck Hyun Youn, **Kenta Kawashima**, Jie Lin, Hyungseob Lim, C. Buddie Mullins, "An Active Nanoporous Ni(Fe) OER Electrocatalyst via Selective Dissolution of Cd in Alkaline Media," *Appl. Catal. B*, **225**, 1–7

† The authors contributed equally to the work.

(**2018**). https://doi.org/10.1016/j.apcatb.2017.11.053

Batteries

38. Sridhar Sethuram Markandaraj, Rinish Reddy Vaidyula, Andrei Dolocan, **Kenta Kawashima**, Ziqing Wang, C. Kyla Lee, C. Buddie Mullins, "Fluorinated Aromatic Diluent Enabling Stable and Non-flammable Phosphate Electrolytes for Sodium Metal Batteries," to be submitted (**2025**).
39. Ziqing Wang, **Kenta Kawashima**, C. Buddie Mullins, "Is the Butler-Volmer Model Accurate for Charge Transfer Kinetics in Aqueous Zinc-Ion Batteries? Insights from Ultramicroelectrode Voltammetry and Marcus-Hush Theory," to be submitted to *ACS Energy Lett.* (**2025**).
40. Rinish Reddy Vaidyula, **Kenta Kawashima**, Zachary W. Brotherton, R. F. Fuller III, Ziqing Wang, Christopher J. Ellison, Nathaniel A. Lynd, C. Buddie Mullins, "Templated Freez-Casting for Porous Organic Battery Electrodes with High-Rate Capabilities," *Adv. Funct. Mater.*, **35**, 2422459 (**2025**). https://doi.org/10.1002/adfm.202422459
41. Ziqing Wang, Jiaao Wang, **Kenta Kawashima**, Zonghang Liu, Graeme Henkelman, C. Buddie Mullins, "Mass Transfer Limitation within Molecular Crowding Electrolyte Reorienting (100) and (101) Texture for Dendrite-Free Zinc Metal Batteries," *Angew. Chem. Int. Ed.*, **63**, e202407881 (**2024**). https://doi.org/10.1002/anie.202407881
42. Rinish Reddy Vaidyula, Mai H. Nguyen, Jason. A. Weeks, Yixian Wang, Ziqing Wang, **Kenta Kawashima**, Andrei Dolocan, Graeme Henkelman, C. Buddie Mullins, "Binary Solvent Induced Stable Interphase Layer for Ultra-Long Life Sodium Metal Batteries," *Adv. Mater.*, **36**, 2312508 (**2024**). https://doi.org/10.1002/adma.202312508
43. Ziqing Wang, Jiefeng Diao, **Kenta Kawashima**, Jason A. Weeks, Rinish Reddy Vaidyula, Graeme Henkelman, C. Buddie Mullins, "Unveiling the Reaction Mechanism of Capacity Reactivation in Silver Vanadate Cathode for Aqueous Zinc-Ion Batteries," *J. Mater. Chem. A*, **11**, 18881–18892 (**2023**). https://doi.org/10.1039/D3TA04030E
44. Qiulin Chen, Hao Li, Melissa L. Meyerson, Rodrigo Rodriguez, **Kenta Kawashima**, Jason A. Weeks, H. Hohyun Sun, Qingshui Xie, Jie Lin, Graeme Henkelman, Adam Heller, Dong-Liang Peng, C. Buddie Mullins, "Li-Zn Overlayer to Facilitate Uniform Lithium Deposition for Lithium Metal Batteries," *ACS Appl. Mater. Interfaces*, **13**, 9985–9993 (**2021**). https://doi.org/10.1021/acsami.0c21195
45. Jie Lin, Jun-Hyuk Kim, Bryan R. Wygant, Melissa L. Meyerson, Rodrigo Rodriguez, Yang Liu, **Kenta Kawashima**, Dandan Gu, Dong-Liang Peng, Hang Guo, Adam Heller, C. Buddie Mullins, "Lithium Fluoride Coated Silicon Nanocolumns as Anodes for Lithium-Ion Batteries," *ACS Appl. Mater. Interfaces*, **12**, 18465–18472 (**2020**). https://doi.org/10.1021/acsami.9b23106
46. Jie Lin, Jin-Myoung Lim, Duck Hyun Youn, Yang Liu, Yuxin Cai, **Kenta Kawashima**, Jun-Hyuk Kim, Dong-Liang Peng, Hang Guo, Graeme Henkelman, Adam Heller, C. Buddie Mullins, "Cu_4SnS_4-Rich Nanomaterials for Thin-Film Lithium Batteries with Enhanced Conversion Reaction," *ACS Nano*, **13**, 10671–10681 (**2019**). https://doi.org/10.1021/acsnano.9b05029
47. Jie Lin, Jin-Myoung Lim, Duck Hyun Youn, **Kenta Kawashima**, Jun-Hyuk Kim, Yang Liu, Hang Guo, Graeme Henkelman, Adam Heller, C. Buddie Mullins, "Self-Assembled Cu–Sn–S Nanotubes with High (De)Lithiation Performance," *ACS Nano*, **11**, 10347–10356 (**2017**). https://doi.org/10.1021/acsnano.7b05294

From Work at Shinshu University

Photocatalysis

1. **Kenta Kawashima**, Mirabbos Hojamberdiev, Kunio Yubuta, Kazunari Domen, Katsuya Teshima, "Synthesis and Visible-Light-Induced Sacrificial Photocatalytic Water Oxidation of Quinary Oxynitride $BaNb_{0.5}Ta_{0.5}O_2N$ Crystals," *J. Energy Chem.*, **27**, 1415–1421 (**2018**). https://doi.org/10.1016/j.jechem.2017.09.006

2. **Kenta Kawashima**, Mirabbos Hojamberdiev, Christina Stabler, Dragoljub Vrankovic, Kunio Yubuta, Ralf Riedel, Kazunari Domen, Katsuya Teshima, "Perovskite $Sr_{1-x}Ba_xW_{1-y}Ta_y(O,N)_3$: Synthesis by Thermal Ammonolysis and Photocatalytic Oxygen Evolution Under Visible Light," *Mater. Renew. Sust. Energ.*, **6**, 10 (**2017**). https://doi.org/10.1007/s40243-017-0094-4

3. **Kenta Kawashima**, Mirabbos Hojamberdiev, Shanshan Chen, Kunio Yubuta, Hajime Wagata, Kazunari Domen, Katsuya Teshima, "Understanding the Effect of Partial N^{3-}-to-O^{2-} Substitution and H^+-to-K^+ Exchange on Photocatalytic Water Reduction Activity of Ruddlesden–Popper Layered Perovskite $KLaTiO_4$," *Mol. Catal.*, **432**, 250−258 (**2017**). https://doi.org/10.1016/j.mcat.2017.01.004

4. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Kunio Yubuta, Shuji Oishi, Kazunari Domen, Katsuya Teshima, "Protonated Oxide, Nitrided, and Re-oxidized $K_2La_2Ti_3O_{10}$ Crystals: Visible-Light-Induced Photocatalytic Water Oxidation and Fabrication of Their Nanosheets," *ACS Sustain. Chem. Eng.*, **5**, 232−240 (**2017**). https://doi.org/10.1021/acssuschemeng.6b01344

5. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Ehsan Zahedi, Kunio Yubuta, Kazunari Domen, Katsuya Teshima, "Two-Step Synthesis and Visible-Light-Driven Photocatalytic Water Oxidation Activity of $AW(O,N)_3$ (*A* = Sr, La, Pr, Nd and Eu) Perovskites," *J. Catal.*, **344**, 29–37 (**2016**). https://doi.org/10.1016/j.jcat.2016.09.001

6. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Masanobu Nakayama, Kunio Yubuta, Shuji Oishi, Kazunari Domen, Katsuya Teshima, "Amount of Tungsten Dopant Influencing the Photocatalytic Water Oxidation Activity of $LaTiO_2N$ Crystals Grown Directly by an NH_3-Assisted KCl Flux Method," *Catal. Sci. Technol.*, **6**, 5389−5396 (**2016**). https://doi.org/10.1039/C5CY02046H

7. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Kunio Yubuta, Junie Jhon M. Vequizo, Akira Yamakata, Shuji Ohishi, Kazunari Domen, Katsuya Teshima, "NH_3-Assisted Flux-Mediated Direct Growth of $LaTiO_2N$ Crystallites for Visible-Light-Induced Water Splitting," *J. Phys. Chem. C*, **119**, 15896−15904 (**2015**). https://doi.org/10.1021/acs.jpcc.5b03718

8. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Kunio Yubuta, Shuji Ohishi, Kazunari Domen, Katsuya Teshima, "Chloride Flux Growth of La_2TiO_5 Crystals and Nontopotactic Solid-State Transformation to $LaTiO_2N$ Crystals by Nitridation Using NH_3," *Cryst. Growth Des.*, **15**, 333−339 (**2015**). https://doi.org/10.1021/cg501397x

9. Mirabbos Hojamberdiev, **Kenta Kawashima**, "Exploring Flux-Grown Transition Metal Oxynitride Perovskites for Photocatalytic Water Oxidation: A Minireview," *Energy Rep.*, **6**, 13–24 (**2020**). https://doi.org/10.1016/j.egyr.2019.09.021

10. Hajime Wagata, Kenta Sakakibara, **Kenta Kawashima**, Mirabbos Hojamberdiev, Kunio Yubuta, Katsuya Teshima, "Alkali Metal Chloride Flux Growth of Ilmenite-Type $ZnTiO_3$ and Subsequent Nitrogen Doping for Visible-Light-Driven Water Oxidation Catalysis," *ACS Appl. Energy Mater.*, **2**, 7762–7771 (**2019**). https://doi.org/10.1021/acsaem.9b00815

11. Mirabbos Hojamberdiev, Mohammad Mansoob Khan, Zukhra Kadirova, **Kenta Kawashima**, Kunio Yubuta, Katsuya Teshima, Ralf Riedel, Masashi Hasegawa, "Synergistic Effect of g-C_3N_4, $Ni(OH)_2$ and Halloysite in Nanocomposite Photocatalyst on Efficient Photocatalytic Hydrogen Generation," *Renewable Energy*, **138**, 434–444 (**2019**). https://doi.org/10.1016/j.renene.2019.01.103

12. Mirabbos Hojamberdiev, **Kenta Kawashima**, Takashi Hisatomi, Masao Katayama, Masashi Hasegawa, Kazunari Domen, Katsuya Teshima, "Distinguishing the Effects of Altered Morphology and Size on Visible-Light-Induced Water Oxidation Activity and Photoelectrochemical Performance of $BaTaO_2N$ Crystal Structures," *Faraday Discuss.*, **215**, 227–241 (**2019**). https://doi.org/10.1039/C8FD00170G

13. Mirabbos Hojamberdiev, **Kenta Kawashima**, Mahesh Kumar, Akira Yamakata, Kunio Yubuta, Aleksander Gurlo, Masashi Hasegawa, Kazunari Domen, Katsuya Teshima, "Engaging the Flux-Grown $La_{1-x}Sr_xFe_{1-y}Ti_yO_3$ Crystals in

Visible-Light-Driven Photocatalytic Hydrogen Generation," *Int. J. Hydrogen Energy*, **42**, 27024–27033 (**2017**). https://doi.org/10.1016/j.ijhydene.2017.09.036

14. Mirabbos Hojamberdiev, Ehsan Zahedi, Ela Nurlaela, **Kenta Kawashima**, Kunio Yubuta, Masanobu Nakayama, Hajime Wagata, Tsutomu Minegishi, Kazunari Domen, Katsuya Teshima, "The Cross-Substitution Effect of Tantalum on Visible-Light-Driven Water Oxidation Activity of $BaNbO_2N$ Crystals Grown Directly by an NH_3-Assisted Flux Method," *J. Mater. Chem. A*, **4**, 12807−12817 (**2016**). https://doi.org/10.1039/C6TA03786K

15. Mirabbos Hojamberdiev, Hajime Wagata, Kunio Yubuta, **Kenta Kawashima**, Junie Jhon M. Vequizo, Akira Yamakata, Shuji Oishi, Kazunari Domen, Katsuya Teshima, "KCl Flux-Induced Growth of Isometric Crystals of Cadmium-Containing Early Transition-Metal (Ti^{4+}, Nb^{5+}, and Ta^{5+}) Oxides and Nitridability to Form Their (Oxy)nitride Derivatives under an NH_3 Atmosphere for Water Splitting Application," *Appl. Catal. B*, **182**, 626−635 (**2016**). https://doi.org/10.1016/j.apcatb.2015.10.002

Teaching & Mentorship Experience

Teaching Experience

Teaching Assistant (UT Austin)

CHE 384T / CH 390L – Electrochemistry / Electrochemistry & Electrochemical Engineering (graduate level)	Jan. 2025 – May 2025
CHE 319 – Transport Phenomena (undergraduate level)	Aug. 2024 – Dec. 2024
CH 390L – Modern Experimental Chemical Science (graduate level)	Jan. 2024 – May 2024
CHE 319 – Transport Phenomena (undergraduate level)	Aug. 2023 – Dec. 2023
CHE 384T / CH 390L – Electrochemistry / 1-Advanced Analytical Chemistry: Electrochemistry (graduate level)	Jan. 2023 – May 2023
CH 390L – Modern Experimental Chemical Science (graduate level)	Jan. 2023 – May 2023
CH 204 – Introduction to Chemical Practice (undergraduate level)	Sep. 2018 – Dec. 2018

Teaching Assistant (Shinshu University)

T6218 – Experiment in Environmental Science & Technology (2) (undergraduate level)	Sep. 2015 – Feb. 2016
T6219 – Experiment in Environmental Science (3) (undergraduate level)	Apr. 2015 – Aug. 2015
T6303 – Environmental Practicum (undergraduate level)	Apr. 2015 – Aug. 2015
T6218 – Experiment in Environmental Science & Technology (2) (undergraduate level)	Sep. 2014 – Feb. 2015
T6219 – Experiment in Environmental Science (3) (undergraduate level)	Apr. 2014 – Aug. 2014
T6303 – Environmental Practicum (undergraduate level)	Apr. 2014 – Aug. 2014

Student Mentorship (Total # of Students: 15)

@Shinshu University

- **Yujin Kamiya** (Fall 2014 – Spring 2016) – Undergraduate/master student at Shinshu University, Project: *Thermally conductive materials for fillers*.
- **Kenta Sakakibara** (Fall 2015 – Spring 2016) – Undergraduate student at Shinshu University (joint paper), Project: *Photocatalysis*.

@UT Austin

- **Isabelle Cheng** (Spring 2017 – Spring 2018) – Undergraduate student at UT Austin (joint paper 1, joint paper 2), Project: *Crystal growth and photoelectrocatalysis*.
- **Chi L. Cao** (Spring 2019 – Fall 2021) – Undergraduate student at UT Austin (joint paper 1, joint paper 2, joint paper 3, joint paper 4), Project: *Electrocatalysis*.
- **Kobe M. Vo** (Fall 2019 – Spring 2022) – Undergraduate student at UT Austin (joint paper 1, joint paper 2), Project: *Electrocatalysis*.

- **Adithya Chunangad** (Spring 2019) – Undergraduate student at UT Austin (joint paper), Project: *Electrocatalysis*.
- **Clarissa Guo** (Fall 2022 – Spring 2023) – Undergraduate student at UT Austin (joint paper), Project: *Fundamental electrochemistry*.
- **Tran Phuoc Anh Nguyen** (Summer 2023 – Fall 2023) – Undergraduate student at UT Austin, Project: *Electrocatalysis*.
- **Thuy Vy Le** (Spring 2023 – Summer 2023) – Undergraduate student at UT Austin (joint paper 1, joint paper 2, joint paper 3), Project: *Electrocatalysis*.
- **Antony Elvin Fernando Milton** (Spring 2023 – present) – Undergraduate student at UT Austin (joint paper), Project: *Electrocatalysis*.
- **John S. Archer** (Spring 2024) – Undergraduate student at UT Austin (joint paper), Project: *Electrocatalysis*.
- **Daniel T. Collins** (Spring 2024 – Fall 2024) – Undergraduate student at UT Austin (joint paper), Project: *Electrocatalysis*.
- **Nicolas Lorenzo Serrat** (Spring 2024 – Fall 2024) – Undergraduate student at UT Austin (joint paper), Project: *Electrocatalysis*.
- **Devansh Deepak Thakkar** (Summer 2024 – Fall 2024) – Undergraduate student at UT Austin, Project: *Electrocatalysis*.
- **Viraj Chetan Negandhi** (Summer 2024 – present) – Undergraduate student at UT Austin, Project: *Electrocatalysis*.

Presentations (Total # of Presentations: 27; Oral: 5; Poster: 22)

International Conferences

Poster Presentation

1. **Kenta Kawashima**, Antony Elvin Fernando Milton, John S. Archer, Daniel T. Collins, Nicolas Lorenzo Serrat, Chikaodili E. Chukwuneke, Thuy Vy Le, Raul A. Marquez, Hugo Celio, C. Buddie Mullins, "Nickel-Iron and Nickel Nitride Precatalysts for Alkaline Water Splitting: The Impacts of Lattice and Electrolyte-Derived Iron Species," PRiME 2024, L01-3772, Honolulu, HI, US (Oct. 2024). https://ecs.confex.com/ecs/prime2024/meetingapp.cgi/Paper/187925
2. **Kenta Kawashima**, Raul A. Marquez, Lettie A. Smith, Rinish Reddy Vaidyula, Omar Ali Carrasco Jaim, Ziqing Wang, Yoon Jun Son, Chi L. Cao, C. Buddie Mullins, "A Literature Survey of Transition Metal Boride, Carbide, Pnictide, and Chalcogenide Water Oxidation Electrocatalysts," 245th ECS Meeting, I01-1766, San Francisco, CA, US (May 2024). https://doi.org/10.1149/ma2024-01341766mtgabs
3. **Kenta Kawashima**, Raul A. Marquez, Yoon Jun Son, Clarissa Guo, Rinish Reddy Vaidyula, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, "Enhancing Accuracy in Alkaline Water Electrolysis Studies: Insights from Hg/HgO Reference Electrode Potential Analysis," 245th ECS Meeting, I01-1766, San Francisco, CA, US (May 2024). https://doi.org/10.1149/ma2024-01583094mtgabs
4. **Kenta Kawashima**, Yoon Jun Son, Ziqing Wang, Roger F. Rose, Raúl A. Márquez-Montes, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, "An Easy-to-Use 3D-Printed Electrochemical Cell for *In Situ* Raman Spectroscopy," 244th ECS Meeting, Z01-3126, Gothenburg, Sweden (Oct. 2023). https://doi.org/10.1149/ma2023-02653126mtgabs
5. **Kenta Kawashima**, Raúl A. Márquez-Montes, Yoon Jun Son, Antony Elvin Fernando Milton, Thuy Vy Le, Clarissa Guo, Lettie A. Smith, Chikaodili E. Chukwuneke, Rinish Reddy Vaidyula, C. Buddie Mullins, "Considerations of Reference Electrodes and Liquid Junction Potentials for Accurate Electrocatalysis Studies," 244th ECS Meeting, L01-2575, Gothenburg, Sweden (Oct. 2023). https://doi.org/10.1149/ma2023-02542575mtgabs
6. **Kenta Kawashima**, Raúl A. Márquez, Yoon Jun Son, Clarissa Guo, Rinish Reddy Vaidyula, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, "Accurate Potentials of Hg/HgO Reference Electrodes for Reporting Alkaline Water Electrolysis Overpotentials," 2023 #RSCPoster Conference, Twitter (Online) (Feb.-Mar. 2023).
7. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Kunio Yubuta, Shuji Oishi, Kazunari Domen, Katsuya Teshima, "Nitrided Layered Ruddlesden–Popper Phase $KLaTiO_4$ and $K_2La_2Ti_3O_{10}$ Crystals: Photocatalytic Water

Oxidation Activity and Fabrication of Their Nanosheets," Materials Science and Engineering Congress (MSE 2016), Technische Universitaet Darmstadt, Darmstadt, Germany (Sept. 2016).

8. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Shuji Oishi, Katsuya Teshima, "Fabrication of $SrNbO_2N$ Crystal Layers on Niobium Substrate by Flux Coating Method with Chloride Flux," International Union of Materials Research Societies - The 15th IUMRS International Conference in Asia, Abstract p.191, Fukuoka University, Fukuoka, Japan (Aug. 2014).
9. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "Flux Growth of La_2TiO_5 Crystals and Subsequent Partial Nitridation to $LaTiO_2N$ Crystals," The 1st International Conference on Surface Engineering, Abstract p.559, Haeundae Grand Hotel, Busan, Korea (Nov. 2013).

National/Regional Conferences/Workshops (US and Japan)

Oral Presentation

1. Alessio Cosenza, Saurabh N. Misal, **Kenta Kawashima**, Ayush Morchhale, "The Emerging Frontier of Material Recycling for Energy Abundance," Collaborative Research Project, 2025 Next Generation Electrochemistry (NGenE) Workshop, Lemont, IL, US (Jun. 2025).
2. **Kenta Kawashima**, Raúl A. Márquez-Montes, Hao Li, Kihyun Shin, Chi L. Cao, Kobe M. Vo, Yoon Jun Son, Bryan R. Wygant, Adithya Chunangad, Duck Hyun Youn, Graeme Henkelman, Víctor H. Ramos-Sánchez, C. Buddie Mullins, "Transformation of a Ni_3N OER Precatalyst in Fe-Purified and Fe-Unpurified Alkaline Media: Revealing the Reason for Its Superior OER Activity," ACS Spring 2023, ID: 3818147 (CATL), Indianapolis, IN, US (Mar. 2023). http://dx.doi.org/10.1021/scimeetings.3c00005
3. **Kenta Kawashima**, Hajime Wagata, Mirabbos Hojamberdiev, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "Flux Growth and Photocatalytic Water Splitting of Visible-Light-Responsive Photocatalyst $LaTiO_2N$ crystals," The 7th Meeting on Applied Materials, Abstract p.8, Nagano, Japan (Jul. 2015).
4. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "One-Step Growth of $LaTiO_2N$ Crystals by KCl Flux Method under NH_3 Gas Flow," The Ceramic Society of Japan, The 27th Fall Meeting, Abstract (DVD) 1B03, Kagoshima, Japan (Sept. 2014).
5. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "Flux Growth of La_2TiO_5 Crystals and Subsequent Partial Nitridation to $LaTiO_2N$ Crystals," The 6th Meeting on Applied Materials, Abstract p.8, Gunma, Japan (Jul. 2014).

Poster Presentation

1. **Kenta Kawashima**, Raúl A. Márquez, Lettie A. Smith, Rinish Reddy Vaidyula, Omar A. Carrasco-Jaim, Ziqing Wang, Yoon Jun Son, Chi L. Cao, C. Buddie Mullins, "Toward Earth-Abundant Water Oxidation Electrocatalysts: Surveying Transition Metal X-ides," 2025 Next Generation Electrochemistry (NGenE) Workshop, Lemont, IL, US (Jun. 2025).
2. **Kenta Kawashima**, Raúl A. Márquez-Montes, Hao Li, Kihyun Shin, Chi L. Cao, Kobe M. Vo, Yoon Jun Son, Bryan R. Wygant, Adithya Chunangad, Duck Hyun Youn, Graeme Henkelman, Víctor H. Ramos-Sánchez, C. Buddie Mullins, "Transformation of a Ni_3N OER Precatalyst in Fe-Purified and Fe-Unpurified Alkaline Media: Revealing the Reason for Its Superior OER Activity," ACS Spring 2023, ID: 3818147 (CATL Sci-Mix), Poster Board Number #1834, Indianapolis, IN, US (Mar. 2023).
3. **Kenta Kawashima**, Raul A. Marquez, Yoon Jun Son, Clarissa Guo, Rinish Reddy Vaidyula, Lettie A. Smith, Chikaodili E. Chukwuneke, C. Buddie Mullins, "Accurate Hg/HgO Electrode Potentials for Reporting Alkaline Water Electrolysis Overpotentials," 2023 CEC Annual Workshop on Electrochemistry, Austin, TX, US (Feb. 2023).
4. **Kenta Kawashima**, Chi L. Cao, Hao Li, Raúl A. Márquez-Montes, Bryan R. Wygant, Yoon Jun Son, Joseph V. Guerrera, Graeme Henkelman, C. Buddie Mullins, "Unusual Morphological Transformation of a Vanadium Carbide

Precatalyst for Alkaline Oxygen Evolution Reaction," The 2021 Southwest Regional Meeting (SWRM) of the American Chemical Society (ACS), No. 455, Austin, TX, US (Nov. 2021).

5. **Kenta Kawashima**, Kihyun Shin, Bryan R. Wygant, Jun-Hyuk Kim, Chi L. Cao, Jie Lin, Yoon Jun Son, Yang Liu, Graeme Henkelman, C. Buddie Mullins, "OH^-- and Cl^--Assisted Polyol Synthesis of Co–CoC_x Composite Microspheres for Electrocatalytic Water Reduction," UT Energy Week & 2020 CEC Annual Workshop on Electrochemistry, Austin, TX, US (Feb. 2020).
6. **Kenta Kawashima**, Yang Liu, Jun-Hyuk Kim, Bryan R. Wygant, Isabelle Chang, Hugo Celio, Oluwaniyi Mabayoje, Jie Lin, C. Buddie Mullins, "Highly Porous $LaW(O,N)_3$ Crystal Structures from $La_4W_3O_{15}$ for Photoelectrochemical Water Oxidation," 2019 CEC Annual Workshop on Electrochemistry, Austin, TX, US (Feb. 2019).
7. **Kenta Kawashima**, Mirabbos Hojamberdiev, Oluwaniyi Mabayoje, Bryan R. Wygant, Kunio Yubuta, Kazunari Domen, Katsuya Teshima, C. Buddie Mullins, "NH_3-Assisted Flux-coating Fabrication of $SrNbO_2N$ Crystal Layers for Photoelectrochemical Water Oxidation," UT Energy Week, GAIN (Graduate and Industry Networking) 2018, & 2018 CEC Annual Workshop on Electrochemistry, Austin, TX, US (Jan. 2018).
8. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Shuji Oishi, Katsuya Teshima, "NH_3-Assisted Flux Growth of W-Doped $LaTiO_2N$ Photocatalytic Crystals and Their Photoreaction of Oxygen Generation," The 10th The Flux Growth Research Workshop of Japan, Abstract p.85, Nagano, Japan (Dec. 2015).
9. **Kenta Kawashima**, Hajime Wagata, Mirabbos Hojamberdiev, Katsuya Teshima, "Effects of the Flux-Nitriding Processes of $LaTiO_2N$ Crystals for Photocatalytic Water Oxidation Reaction," 2015 Fiscal Year Academic Lecture of Materials Science Society of Japan, Abstract pp.90−91, Tokyo, Japan (Jun. 2015).
10. **Kenta Kawashima**, Hajime Wagata, Mirabbos Hojamberdiev, Katsuya Teshima, Shuji Oishi, "Observation of $LaTiO_2N$ Crystals Growth Process in the NH_3-Assisted KCl Flux Method," The 9th The Flux Growth Research Workshop of Japan, Abstract p.87, Kochi, Japan (Dec. 2014).
11. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "Fabrication of Rodlike $LaTiO_2N$ Crystals by Two-Step Process Consisting of Flux Growth and Nitridation," The 8th The Flux Growth Research Workshop of Japan, Abstract p.119, Tokyo, Japan (Dec. 2013).
12. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "NaCl Flux Growth of La_2TiO_5 Crystals and Subsequent Partial Nitridation," International Discussion Meeting on Crystal Growth (37th Toronkai), Abstract p.2, Nagano, Japan (Sept. 2013).
13. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, "Chloride Flux Growth of La_2TiO_5 Crystals and Subsequent Partial Nitridation to $LaTiO_2N$ Crystals," The Ceramic Society of Japan, The 26th Fall Meeting, Abstract (DVD) 1PQ08, Nagano, Japan (Sept. 2013).

Seminars (Oral Presentations: 8)

1. **Kenta Kawashima**, "Earth-Abundant Electrocatalysts for Water Splitting: Insights into Their *In Situ* Phase and Morphological Transformations," Research Seminar (Department of Materials Science and Engineering), University of Toronto, Starkville, Toronto, ON, Canada (Apl. 2025) (***Invited Talk***).
2. **Kenta Kawashima**, "Fundamentals of Corrosion: The Role of Electrochemistry," Teaching Seminar (Department of Materials Science), University of Toronto, Toronto, ON, Canada (Apl. 2025) (***Invited Talk***).
3. **Kenta Kawashima**, "Earth-Abundant Electrocatalysts for Water Splitting: Insights into Their *In Situ* Phase and Morphological Transformations," Seminar (Department of Chemistry), Mississippi State University, Starkville, MS, US (Feb. 2025) (***Invited Talk***).
4. **Kenta Kawashima**, "Unusual Transformation of a Vanadium Carbide (V_8C_7) Oxygen Evolution Electrocatalyst," The Analytical and Physical Student Seminar, UT Austin, Austin, TX, US (Zoom) (Sept. 2020).

5. **Kenta Kawashima**, “Development of Transition Metal Carbide, Pnictide, and Chalcogenide Electrocatalysts for Hydrogen and Oxygen Evolution,” The Analytical and Physical Student Seminar, UT Austin, Austin, TX, US (Jan. 2019).
6. **Kenta Kawashima**, Mirabbos Hojamberdiev, Hajime Wagata, Shuji Oishi, Katsuya Teshima, “Growth of W-doped $LaTiO_2N$ Photocatalyst Crystals by KCl Flux Method under NH_3 Gas Flow and Their Evaluation of Activity of Photo-Oxygen Generation,” 2015 Fiscal Year Four Universities Related Young Researchers Development Institute, Lecture No. 2-15, Nagano, Japan (Nov. 2015).
7. **Kenta Kawashima**, Hajime Wagata, Mirabbos Hojamberdiev, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, “One-Step Growth of $LaTiO_2N$ Crystals by KCl Flux Method under NH_3 Gas Flow,” 2014 Fiscal Year Four Universities Related Young Researchers Development Institute, Lecture No. 1-7, Yamanashi, Japan (Nov. 2014).
8. **Kenta Kawashima**, Hajime Wagata, Nobuyuki Zettsu, Katsuya Teshima, Shuji Oishi, “Chloride Flux Growth of La_2TiO_5 Crystals and Subsequent Partial Nitridation to $LaTiO_2N$ Crystals,” 2013 Fiscal Year Four Universities Related Young Researchers Development Institute, Lecture No. 10-9, Shizuoka, Japan (Nov. 2013).

Memberships

- Graduate Student Member, American Institute of Chemical Engineers (AIChE)
- MRSC Member, Royal Society of Chemistry (RSC)
- Student Member, American Chemical Society (ACS)
- Student Member, Electrochemical Society (ECS)
- Individual Member, The Ceramic Society of Japan
- Regular Member, Flux Growth Society of Japan
- Member, Council of Graduate Chemists (CGC)

Additional Academic Activities

Peer Review Experiences (130 reviews for 81 publications)

- ACS Applied Materials & Interfaces (7 times)
- ACS Applied Energy Materials (8 times)
- ACS Applied Engineering Materials (2 times)
- Advanced Energy Materials (2 times)
- Advanced Science (1 time)
- Applied Energy (7 times)
- Catalysts (2 times)
- Chemical Engineering Journal (5 times)
- Coatings (5 times)
- Current Catalysis (1 time)
- Electrochimica Acta (2 times)
- Electrochemistry Communications (1 time)
- Fuel (2 times)
- Inorganic Chemistry (1 time)
- Inorganic Chemistry Communications (4 times)
- International Journal of Electrochemical Science (4 times)
- International Journal of Hydrogen Energy (29 times)
- Journal of Crystal Growth (1 time)

- Journal of Electroanalytical Chemistry (3 times)
- Journal of Energy Storage (3 times)
- Journal of Hazardous Materials (6 times)
- Journal of Materials Chemistry A (3 times)
- Materials Today Chemistry (1 time)
- Materials Today Communications (1 time)
- Materials (5 times)
- Materials Letters (1 time)
- Mathematical and Computer Modelling of Dynamical Systems (1 time)
- Minerals Engineering (2 times)
- Molecules (1 time)
- Nanomaterials (13 times)
- Nano-Micro Letters (1 time)
- The Journal of Physical Chemistry (2 times)
- Water (3 times)

Judge Experiences

- Technology & Science Undergraduate Research Forum – poster competition judge (Apr. 2024) [Link]
- Texas Section ECS Symposium – poster competition judge (Sept. 2024) [Link]

Conference Organization Experience

- Conference Assistant (The 7th Meeting on Applied Materials) (Jul. 2015)
  - I assisted in creating the meeting program and organizing the conference (Japan).

Volunteers

Regional Contribution Experience

Environmental Conservation Volunteer — Summer 2011

- I joined the forest maintenance team in Nagano (Japan) and discussed forest problems with local community members. I learned how to use a chainsaw to cut untrimmed trees in the savage mountains for harvesting timber.

Additional Profile URLs

- ResearchGate: https://www.researchgate.net/profile/Kenta_Kawashima
- ORCID: 0000-0001-7318-6115
- Scopus Author ID: 56478199700
- Web of Science ResearcherID: V-6231-2018
- Loop Profile: 724507
- researchmap ID: R000055964
- J-GLOBAL ID: 202301017524532130
- SciProfiles: 3444529
- X (Twitter): @KentaKawashima3