Chunmei Ban

1111 Engineering Dr., Boulder, CO, 80309 Email: chunmei.ban@colorado.edu

Current Position

Associate Professor, Department of Mechanical Engineering, and Materials Science & Engineering Program, University of Colorado, Boulder, CO.

EDUCATION BACKGROUND

2008 - 2011	**Postdoctoral Researcher, NREL**, Golden, CO, USA. *Advisor: Dr. Anne Dillon (deceased)*
2004 - 2008	**Ph.D, Chemistry**, State University of New York (SUNY) at Binghamton, Binghamton, NY, USA. *Advisor: Prof. M. Stanley Whittingham (**2019 Nobel Prize Laureate**)*
2000 - 2003	**Master**, **Electrochemistry**, Tianjin University, Tianjin, China. Advisor: Dr. Suwei Yao
1996 - 2000	**Bachelor**, **Chemical Engineering,** Tianjin University, Tianjin, China

ACADEMIC AND OTHER EMPLOYMENT HISTORY

2019 - present	**Associate Professor,** Paul M. Rady Department of Mechanical Engineering and Materials Science & Engineering Program, **University of Colorado Boulder**, Boulder, CO
2019 - 2019	**Associate Professor,** Department of Mechanical Engineering, **Virginia Tech**, Blacksburg, VA
2018 - 2019	**Joint Appointment, Renewable and Sustainable Energy Institute**, University of Colorado Boulder, Boulder, CO
2017 - 2019	**Senior Scientist (V),** Principal Investigator, Chemistry and Nanoscience Center, National Renewable Energy Laboratory (**NREL**), Golden, CO
2014 - 2017	**Senior Scientist (IV),** Principal Investigator, **NREL**, Golden, CO
2011 - 2014	**Scientist (III),** Principal Investigator, **NREL**, Golden, CO

HONORS AND AWARDS

2020	Cambridge Innovation Institute, "Passion and Process in Battery Research: Harnessing Nature's Bounty"
2016-Present	Editorial Advisory Board Member for Sustainable Energy & Fuels
2017-Present	Editor and Board member of the Institute of Engineering and Technology (IET) a Charity registered in England & Wales and Scotland, UK
2018	NREL news, "Chunmei Ban is Getting Charge Out of Battery Research by Finding Right Chemistry"

2018	NREL President's Award on research of Operando X-ray Photoelectron Spectroscopy
2018	General Chair of Beyond Li-ion Conference XI, Westlake, OH
2015	NREL Award for Outstanding Contribution
2014	FLC Mid-Continent regional award and NREL Innovation and Technology Transfer Awards, 2014;
2014	Phys Org, "Team bolsters batteries with nanotubes"
2013	General Chair for Beyond Li-ion conference VI, Boulder, CO

BOOK and JOURNAL

2021 "Lithium-ion Battery Enabled by Silicon Anodes", **C. Ban**, K. Xu, eds. The Institute of Engineering and Technology, IET, Production

2021 "ECS Focus Issue on Energy Storage Research in China" V. Thangadurai, **C. Ban**, et al. Electrochemical Soc. 2021

CHAPTERS in BOOKS

2016 K. E. Hurst, J. M. Luther, **C. Ban**, S. T. Christensen, "Nanomaterials for Energy Applications" In Mansfield, E.; Kaiser, D. L.; Fujita, D.; Van de Voorde, M. (Ed). Metrology and Standardization of Nanomaterials: Protocols and Industrial Innovations; Wiley. 2016

PATENTS

Granted:

1. C. Ban, S-B Son, M. Groner, "Coated semiconductor particles and methods of making the same", U.S. Non-provisional patent application, U.S. Patent No. US 11,038,162, granted on June 15, 2021
2. C. Ban, Y. Zhao, S.B. Son, D. Ruddy, P. Parilla, "Magnesium-based methods, systems, and devices", U.S. Patent No. US 10, 490, 872, granted on Nov. 26, 2019
3. C. Ban and S-B Son, "Magnesium metal electrodes and methods of making the same", U.S. provisional application, U.S. Patent No. US 10,930,928, granted on Feb. 23, 2021
4. C. Ban, T. Genett, W. Braunecker and D. Arrelaine, "Materials for flow battery energy storage and methods of using", U.S. Patent No. US: 10, 367, 222, filed on Feb. 28, 2017, granted on July 30, 2019.
5. C. Ban, Z. Wu and A. Dillon, "Method of fabricating electrodes including high-capacity, binder-free anodes for lithium-ion batteries", U.S. Patent No. 9,543,054B2 (Licensed to NanoReserach Inc.), granted Jan. 10, 2017.
6. C. Ban, T. Gennet, D, Ginley, W. Braunecker, Z. Owczarczyk, "Hybrid radical energy storage device and method of making", U.S. Patent No. 9,324,992B2, granted on April 26, 2016

Applications:

7. The provisional patent has been filled on April 21, 2021. K. Smith, S. Shriram, S. Nathaniel,

C. Andrew, C. Ban, X. Li, "Methods and Devices for Electrochemical Lithiation of Lithium-ion Batteries", Application No. PCT/US21/57182 Filling Date: Oct. 29, 2021

8. T. Brooks, T. Adele, C. Ban, C. Melamed, A. Osella, "Ternary Nitride Negative Electrode Based Lithium-Ion Battery", Application No. 16/983,672, Filling Date: August 3, 2020
9. C. Ban, S. Hafner, S. Lee, "Solid-State Energy Storage Devices and Methods of Making the Same", U.S. Provisional application, Publication No.:US 2020/0243834 A1, Application No.: 16/682,064, Filling Date: Nov. 13 2019

PUBLICATIONS (Corresponding author *)

Publications after joining CU Boulder in August 2019

1. Z. Liang, **C. Ban***, "Strategies to Enable Reversible Magnesium Electrochemistry: From Electrolytes to Artificial Solid-Electrolyte Interphase", **Agnewandte Chemie International Edition**, 2021, 60 (20), 11036, DOI/10.1002/anie.202006472
2. Son S-B, Ban C. "Surface modification for silicon anodes." in Lithium-Ion Batteries Enabled By Silicon Anodes Ed. Ban C; Xu K. 2021. 277-313.
3. P. Albertus, V. Anadan, **C. Ban**, et. al. "Challenges for and Pathways toward Li-Metal-Based All-Solid-State Batteries", **ACS Energy Lett.** 2021, 6, 4, 1399, DOI/ /10.1021/acsenergylett.1c00445
4. C. Stetson, Y. Yin, A. Norman, S.P. Harvey, M. Schnabel, **C. Ban**, C.S.Jiang, S. C. DeCaluwe, M. Al-Jassim, "Evolution of Solid Electrolyte Interphase and Active Materials in the Silicon Wafer Model System", **J. Power, Sources**, 2021, 482, 228946, DOI/10.1016/j.jpowsour.2020.228946
5. Y. Yin, C. Jiang, H. Guthrey, C. Xiao, N. Seitzman, **C. Ban*,** M. Al-Jassim, "Improved Stability and Cyclability of Ceramic Solid Electrolyte by Coating Polymer", **J. Electrochemical Society**, 2020, 167 (2), 020519, DOI /10.1149/1945-7111/ab68c7
6. S. Herle**, C. Ban** et al. "Challenges for and Pathway Toward Solid-State Batteries", Technical Report, Oak Ridge National Lab, Oak Ridge, TN. 2020, ORNL/TM-2020/1747
7. Y.Qi, **C. Ban***, S. Harris, A New General Paradigm for Understanding and Preventing Li Metal Penetration through Solid Electrolytes", **Joule**, 2020, 4(12) 2599, DOI/10.1016/j.joule.2020.10.009
8. D. Dang, Y. Wang, M. Wang, J. Hu, **C. Ban**, Y.T. Cheng, "Lithium Substituted Poly(acrylic acid) as a Mechanically Robust Bonder for Low-Cost Silicon Microparticle Electrodes", **ACS Applied Energy Materials**, 2020, 3(11), 10940, doi.org/10.1021/acsaem.0c01923
9. S. Harvey, A. Burrell, E. Arca**, C. Ban**, K. Periyapperuma, C. Pozo-Gonzalo, T. Pathirana, P. C. Howlett, "High Current Cycling in a Superconcentrated Ionic Liquid Electrolyte to Promote Uniform Li Morphology and a Uniform LiF-Rich Solid Electrolyte Interphase", **ACS Applied Materials & Interfaces**, 2020, 12(37), doi.org/10.1021/acsami.0c09074
10. X. Li, F. Dogan, Y. Lu, C. Antunes, Y. Shi, A. Burrell, **C. Ban***, "Fast Determinization of Lithium Content in Spent Cathodes for Direct Battery Recycling", **Advanced Sustainable System**, 2020, 4(8), 2000073, doi.org/10.1002/adsu.202000073

11. M. Schnabel, S. P Harvey, E. Arca, C. Stetson, G. Teeter, **C. Ban**, P. Stradins, "Surface SiO2 Thickness Controls Uniform-to-Localized Transition in Lithiation of Silicon Anodes for Lithium-Ion Batteries", **ACS Applied Materials & Interfaces**, 2020, 12(24), 27017, doi.org/10.1021/acsami.0c03158

Publications prior to joining CU Boulder

12. J. Liu, T. Yoon, **C. Ban**, M. Al-Jassim, "Microstructure Study on Initial Lithiation/Delithiation Cycle of Crystalline Silicon Wafer—ADDENDUM", **Microscopy and Microanalysis**, 2020, 26(1), 183, doi.org/10.1017/S1431927619015290
13. Y Yin, E Arca, L Wang, G Yang, M Schnabel, L Cao, C Xiao, H Zhou, P Liu, J. Nanda, G. Teeter, B. Eichhorn, K. Xu, A. Burrell, C. Ban, "Nonpassivated Silicon Anode Surface", **ACS Applied Materials & Interfaces** 2020, 12 (23), 26593-26600
14. K. Periyapperuma, E. Arca, S. Harvey, **C. Ban**, A. Burrell, D.R. MacFarlane, C. Pozo-Gonzalo, M. Forsyth, P. Howlett, "Towards High Rate Li Metal Anodes: enhanced performance at high current density in a superconcentrated ionic liquid" **J. Mater. Chem**., 2020, Advanced Article, DOI/10.1039/C9TA12004A
15. W. Fang, Y. Tang, **C. Ban**, Q. Kang, R. Qiao, W. Tal, "Atomic Layer Deposition in Porous Electrodes: A Pore-Scale Modeling Study", **Chemical Engineering Journal,** 2019, 378, DOI /10.1016/j.cej.2019.122099.
16. C. Stetson, Y. Yan, C.S. Jiang, S. DeCaluwe, M. Al-Jassim, N. Neale, **C. Ban*,** A. Burrell, "Temperature-Dependent Solubility of Solid Electrolyte Interphase on Silicon Electrodes", **ACS Energy Letters,** 2019, 4, DOI /10.1021/acsenergylett.9b02082
17. J. Liu, T. Yoon, **C. Ban**, M. Al-Jassim, "Microstructure Study on Initial Lithiation/Delithiation Cycle of Crystalline Silicon Wafer", **Microscopy and Microanalysis,** 2019, 25, DOI /10.1017/S143192761901122X
18. D. P. Finegan, A. Vamvakeros, L. Cao, C. Tan, T. M.M. Heenan, S. Demi, M. D. Michiel, K. Smith, P. R. Shearing, **C. Ban***, "Spatially Resolving Lithiation Using X-ray Diffraction Computed Tomography", 2019, **Nano Letter**,19 (6), DOI /10.1021/acs.nanolett.9b00955
19. J. M. Wallas, B. C. Welch, Y. Wang, J. Liu, S. E. Hafner, R. Qiao, T. Yoon, Y-T Cheng, S. M. George, **C. Ban*,** "Spatial Molecular Layer Deposition of Ultrathin Polyamide to Stabilize Silicon Anodes in Lithium-Ion Batteries", ***ACS Applied Energy Materials***, 2019, 2(6). DOI/10.1021/acsaem.9b00326
20. S. Hafner; H. Guthrey; S-H Lee, **C. Ban***, "Synchronized electrospinning and electrospraying technique for manufacturing of all-solid-state lithium-ion batteries" ***Journal of Power Sources,*** 2019, 431, 17. DOI/10.1016/j.jpowsour.2019.05.008
21. T. Yoon, C. Xiao, J. Liu, Y. Wang, S-B. Son, A. Burrell, **C. Ban***, "Electrochemically Induced Fractures in Crystalline Silicon Anodes", ***Journal of Power Sources,*** 2019, 425(15), 44. DOI:/10.1016/j.jpowsour.2019.03.105. DOI/10.1016/j.jpowsour.2019.03.105
22. C. Stetson, T. Yoon, J. Coyle, W. Nemeth, M. Young, A. Norman, S. Pylypenko, **C. Ban**, C.S. Jiang, M. Al-Jassim, A. Burrell, "Three-Dimensional Electronic Resistivity Mapping of Solid Electrolyte Interphase on Si Anode Materials", ***Nano Energy,*** 2019, 55, 477. DOI/10.1016/j.nanoen.2018.11.007

23. S-B. Son, C. Lei, T. Yoon, A. Cresce, M. Groner, J. Liu, S. E. Hafner, K. Xu, and **C. Ban***, "Interfacially Induced Cascading Failure in Graphite-Silicon Composite Anodes", ***Advanced Science,*** 2018, 1801007. DOI/10.1002/advs.201801007
24. S-B. Son, T. Gao, S. Harvey, K. Steirer, A. Stokes, C. Wang, K. Xu, and **C. Ban***, "An Artificial Interphase Enables Reversible Magnesium Chemistry in Carbonate Electrolytes", ***Nature Chemistry***, 2018, 10, 532. DOI/10.1038/s41557-018-0019-6
25. K. Wood, K.X. Steirer, S. Hafner, **C. Ban**, S. Santhanagopalan, S.H. Lee, G. Teeter, "Operando X-ray Photoelectron Spectroscopy of Solid Electrolyte Interphase Formation and Evolution in Li_2S-P_2S_5 Solid-state Electrolytes***", Nature Communications,*** 9 (1), 2018, 2490.
26. S-B. Son, Y. Wang, J. Xu, X. Li, M. Groner, A. Stokes, Y. Yang, Y.-T. Yang, **C. Ban***, "Systematic Investigation of the Alucone-Coating Enhancement on Silicon Anodes", ***ACS Applied Materials Interfaces***, 2017, 9(46), 40143, DOI/10.1021/acsami.7b08960
27. J. Whitely, S. Hafner, S. Han, S. Kim, V. Le, ***C. Ban***, Y. Kim, K. Oh and S. Lee, "All-Solid-State Disordered $LiTiS_2$ Pseudocapacitor", ***Journal Materials Chemistry A***, 2017, 5, 15661
28. T. Evans, D.M. Piper, H. Sun, T. Porcell, S.C. Kim, S.S. Han, Y.S. Choi, C. Tian, D. Nordlund, M. Doeff, **C. Ban**, S.J. Cho, K.H. Oh, S.H. Lee, "In Situ Engineering of the Electrode-Electrolyte Interface for Stabilized Overlithiated Cathodes", ***Advanced Materials,*** 2017, 1604549, DOI/10.1002/adma.201604549
29. **C. Ban*,** S. M. George, "Molecular Layer Deposition for Surface Modification in Li-ion Batteries", Review, ***Advanced Materials Interface***, 2016, 29(10), 1600762, DOI/10.1002/admi.201600762
30. D. M. Piper, Y. Lee, S-B. Son, T. Evans, F. Lin, D. Nordlund, X Xiao, S. M. George, S.H. Lee, **C. Ban*,** "Cross-linked aluminum dioxybenxene coating for stabilization of silicon electrodes", ***Nano Energy,*** 2016, 22, 202, DOI/10.1016/j.nanoen.2016.02.021.
31. D. Asakura, E. Hosono, Y. Nanba, H. Zhou, J. Okabayashi, **C. Ban**, P. Glans, J. Guo, T. Mizokawa, G. Chen, A. J. Achkar, D. G. Hawthron, T. Z. Regier, and H. Wadati, "Material/element-dependent fluorescence-yield modes on soft X-ray absorption spectroscopy of cathode materials for Li-ion batteries" ***AIP Advances*** 2016, 6, 035105.
32. X. Li, C. A. Wolden, **C. Ban**, Y. Yang, "Facial synthesis of lithium sulfide nanocrytals for use in advanced rechargeable batteries" ***ACS Applied Materials Interfaces***, 2015, 7(51):28444-51 DOI/10.1021/acsami.5b09367
33. A. M.Wise, **C. Ban*,** J. N. Weker, S. Misra1, A. S. Cavanagh, Z. Wu, Z. Li, M. S. Whittingham, K. Xu, S. M. George, and M. F. Toney "The effect of Al2O3 coating on stabilizing LiNi0.4Mn0.4Co0.2O2 cathodes" ***Chemistry Materials,*** 2015, 27 (17), 6146, DOI/10.1021/acs.chemmater.5b02952
34. Y. Ma, J. M. Martinez De La Hoz, I. Angarita, J. M. Berrio-Sanchez, L. Benitez, J. M. Seminario, S-B Son, S-H. Lee, S. M. George, **C. Ban** and P. Balbuena, "structure and Reactivity of Alucone-Coated Films on Si and LixSiy Surface", ***ACS Applied Materials Interfaces***, 2015, 7 (22), pp 11948–11955, DOI/10.1021/acsami.5b01917
35. L. Luo, H. Yang, P. Yang, J. Travis, Y. Lee, N. Liu, D. M. Piper, S. H. Lee, P. Zhao, S. M. George, J.G. Zhang, Y. Cui, S. Zhang, **C. Ban*** and C. Wang, "Surface-Coating Regulated

Lithiation Kinetics and Degradation in Silicon Nanowires for Lithium Ion Battery", ***ACS Nano***, 2015, 9 (5), pp 5559-5566, DOI/10.1021/acsnano.5b01681

36. S.-B. Son, B. Kappes and **C. Ban***, "Surface Modification of Silicon Anodes for Durable and High Energy Lithium-Ion Batteries" ***Israel Journal Chemistry Materials*** 2015, DOI/10.1002/ijch.201400173
37. Y. He; D. Piper; M. Gu; J. Travis; S. George; S. Lee; A. Genc; L. Pullan; J. Liu; S. Mao; J. Zhang; **C. Ban***; C. Wang, "In-Situ TEM Investigation of the Effect of Native Oxide and Molecular Layer Deposited Coating on Silicon Nanoparticles for Lithium Ion Battery Anodes" ***ACS Nano***, 2014 8 (11), 11816, DOI/10.1021/nn505523c.
38. D. M. Piper, S-B. Son, J. J. Travis, Y. Lee, S. S. Han, S. C. Kim, K. H. Oh, S. George, S.H. Lee, **C. Ban*,** "Mitigating Irreversible Capacity Losses from Carbon Agents via Surface Modification", ***Journal of Power Sources***, 2014, DOI/10.1016/j.jpowsour.2014.11.032
39. Z. Li, **C. Ban (co-first author)**, N. A. Chernova, Z. Wu, S. Upretia, A. Dillon, M. Stanley Whittingham, "Towards understanding the rate capability of layered transition metal oxides LiNiyMnyCo1−2yO2", ***Journal of Power Sources***, 268 106 2014
40. F. Lin, D. Nordlund, T-C Weng, Y. Zhu, **C. Ban**, R. M. Richards, H.L. Xin "Phase evolution for conversion reaction electrodes in lithium-ion batteries" ***Nature Communications,*** 5:3358 2014
41. D. M. Piper, J. J. Travis, M. Young, S-B. Son, S. C. Kim, K. H. Oh, S. George, **C. Ban*,** S.H. Lee, "Reversible High Capacity Si Nanocomposite Anodes for Lithium-ion Batteries enabled by Molecular Layer Deposition" ***Advanced Materials,*** 26 (10) 1596 2013
42. D. M. Piper, T. A. Yersak, S-B. Son, S. C. Kim, C. S. Kang, K. H. Oh, **C. Ban**, A. C. Dillon, and S.H. Lee, "Conformal Coatings of Cyclized-PAN for Mechanically Resilient Si nano-Composite Anodes", ***Advanced Energy Materials,*** 3 (6) 697 2013
43. I. Bloom, L Trahey, A. Abouimrane, I Belharouak, X. Zhang, Q. Wu, W. Lu, D. P. Abraham, M. Bettge, J. W. Elam, X. Meng, A.Burrella, **C. Ban**, R. Tenent, J. Nanda, N. Dudney, "Effect of Interface Modifications on Voltage Fade in 0.5Li2MnO3•0.5LiNi0.375Mn0.375Co0.25O2", ***Journal of Power Sources,*** 249 509 2013
44. **C. Ban**, Ming Xie, Xiang Sun, Jonathan J Travis, GongkaiWang, Hongtao Sun, Anne C Dillon, Jie Lian and Steven M George, "Atomic layer deposition of amorphous TiO2 on graphene as an anode for Li-ion batteries" (invited paper) ***Nanotechnology,*** 24, 424002, 2013
45. Y.S. Jung, P. Lu, A. S. Cavanagh, C. **Ban,** G. Kim, S. H. Lee, S. M. George, S. J. Harris, A. C. Dillon, "Unexpected Improved Performance of ALD Coated LiCoO2/Graphite Li-Ion Batteries" ***Advanced Energy Materials***， 3 (213) 2013
46. **C. Ban**, W. Yin, H. Tang, S. Wei, A.C. Dillon and Y. Yan, "A Novel Codoping Approach for Enhancing the Performance of LiFePO4 Cathodes", ***Advanced Energy Materials***, 2(8) 1028, 2012
47. Y. Zhao, **C. Ban**, J. Kang, S. Santhanagopalan, G.-H. Kim, S.-H. Wei, and A. C. Dillon, "P-type Doping of Lithium Peroxide with Carbon Sheets" ***Applied Physics Letters*** 101(2) 023903, 2012
48. **C. Ban**, B. Kappes, Q Xu, C. Engtrakul, C .V. Ciobanu, A. *C*. Dillon and Y Zhao, "Lithiation of silica through partial reduction" ***Applied Physics Letters*** 100, 243905 2012
49. **C. Ban**, Z. Li, Z. Wu, M. J. Kirkham, L. Chen, Y Jung, E. Payzant, Y. Yan, M. S. Whittingham, A. C. Dillon, "Extremely Durable High-rate Capability of a $LiNi_{0.4}Mn_{0.4}Co_{0.2}O_2$ Cathode

Enabled with Single-Walled Carbon Nanotubes" ***Advanced Energy Materials*** 1 (1) 58 2011.

50. Y. Zhao, **C. Ban**, Q. Xu, S. Wei, "Charge-Driven Structure Transformation and Valence Versatility of Boron Sheets in Magnesium Borides" ***Physics Review B***. 83 035406 2011.
51. A.C. Dillon, L.A. Riley, Y.S. Jung, **C. Ban**, D. Molina, A.H. Mahan, A.S. Cavanagh, S.M. George, S.-H. Lee, "HWCVD MoO3 nanoparticles and a-Si for next generation Li-ion anodes" ***Thin Solid Films***, 519 (14) 4495 2011.
52. Q. Xu, **C. Ban**, A. C. Dillon, S. Wei, Y. Zhao, "First-principles Study of Lithium Borocarbide as a Cathode Material for Rechargeable Li-ion Batteries" ***J Physics Chemistry Letters*** 2 (10) 1129 2011
53. Yin, S. Wei, **C. Ban**, Z. Wu, M. Jassim, Y Yan, "Origin of Bonding between the SWCNT and the Fe_3O_4 (001) Surface" ***J Phys Chem. Lett.*** 2(22), 2853,2011
54. **C. Ban**, Z. Wu, D. T. Gillaspie, L. Chen, Y. Yan, J. L. Blackburn, A. C. Dillon, "Nanostructured Fe3O4-SWNT Electrode: Binder-free and High-rate Li-Ion Anode", ***Advanced Materials,*** l22 (20) 145 2010.
55. **C. Ban**, and A. C. Dillon, "High Capacity and High Rate Li -Ion Anodes for Electric Vehicles", ***ENT*** 2 46 2010.
56. **C. Ban**, N. A. Chernova, M. S. Whittingham, "Electrospun Nano-vanadium Pentoxide Cathode" ***Electrochemistry communications,*** 11 522 2009.
57. **C. Ban**, M. S. Whittingham, "Nanoscale Single-Crystal Vanadium Oxides with Layered Structure by Electrospinning and Hydrothermal Methods", ***Solid State Ionics,*** 179 1721 2008.
58. **C. Ban**, M. S. Whittingham, "Electrospinning of Single-Crystal Vanadium Oxide Nanorods", ***Materials Research Society Symposium Proceeding,*** 988 QQ09-31, 2007.
59. C. Jacobs, M. Roppolo, K. Butterworth, **C. Ban**, N. A. Chernova, M. S. Whittingham, "Magnetic properties of vanadium oxide nanotubes, nanourchins, and nanorods", ***Materials Research Society Symposium Proceeding,*** 988E, 0988-QQ03-19, 2007.
60. **C. Ban**, H. Liu, B. Yu, W. Zhang, S. Yao, "Research on the thin silver film at monolayer of stearic acid", ***Chinese Journal of Chemical Physics,*** 16 (2) 146 2003.
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62. W. Zhang, H. Liu, **C. Ban**, B. Yu, S. Yao, "The Progress of Preparation of Composite Nanostructured Films by Monolayer-induced Electroless/Electrodeposition", ***Journal of Materials Engineering***, 6, 44, 2003.
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65. H. Liu, S. Yao, **C. Ban**, W. Zhang, S. Yao, "Study on Silver Films by Electroless Deposition through Monolayer Induction", ***Chinese Journal Materials Research***, 6 664 2002.
66. **C. Ban,** S. Yao, B. Yu, H. Liu, W. Zhang, H. Wang, S Yao, "Fabrication of Silver Thin Films through Stearic Monolayer", ***9th annual conference of electroplating engineering proceeding***, 2002.

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INVITED PRESENTATION at INTERNATIONAL CONFERENCES and UNIVERSITIES (After Joined CU Boulder in August 2021)

1. 240th Electrochemical Society Fall Meeting: "Fast Determination of Lithium Content and Failure Mechanism for Aged Lithium-ion Battery Electrodes" 2021
2. 2021 Atomic Layer Deposition Annual Meeting: "Molecular Layer Deposition for Electrochemical Materials" 2021
3. Keynote presentation on "A Proposed Solution to Li Dendrite Penetration Into Solid Electrolytes" at 240th Electrochemical Society Fall Meeting, 2021
4. NanoEngineering Department Distinguished Seminar Series at UC San Diego 2021
5. MRS Fall Meeting: "Artificial Solid-Electrolyte Interphase for Reversible Magnesium Electrochemistry" 2020
6. Mechanical Engineering Distinguished Seminar Series at School of Mines, 2020
7. MRS Fall Meeting: "Stability and Evolution of Solid Electrolyte Interphase on Lithium-Ion Anodes" 2020
8. ECS PRiME Meeting: "Fast Determination of Lithium Content and Failure Mechanism for NMC Cathodes" 2020
9. International Battery Seminar & Exhibit: "Simultaneously Electrospinning and Electrospraying Technique for Manufacturing of All-Solid-State Lithium-ion Batteries" 2020
10. NSF CBET Energy Storage Workshop, "Magnesium Electrochemistry in Noaqueous Electrolytes" 2020
11. Atomic Layer Deposition Annual Meeting: "Molecular Layer Deposition for Stabilization of Electrochemical Materials" 2020
12. MRS Fall Meeting, Boston, MA: "A Facile Approach to Detect Lithium Content in the Spent Lithium-Ion Battery Materials" 2019
13. American Chemical Society (ACS) Fall National Meeting, San Diego, CA: "Interface Science and Engineering for Stabilizing Electrochemical Materials" 2019

INVITED PRESENTATION at INTERNATIONAL CONFERFENCES (2009-2019, Prior to joining CU Boulder)

13. C. Ban, 2018 Materials Research Society (MRS) Fall Meeting, Boston, MA: Scalable Surface Modification Techniques for Electrochemical Materials
14. C. Ban, 2018 Materials Research Society (MRS) Spring Meeting, Phoenix, Arizona: Effect of Surface Modification on Surface Chemistry and Electrochemistry of Silicon-Based Anode Materials
15. C. Ban, 2018 Annual Merit Review Meeting, Department of Energy: Surface Chemistry of Solid Electrode Interface in Silicon Anodes
16. C. Ban, 2017 Lithium Battery Materials & Battery Safety, Washington D.C.: Promises and Challenges of Silicon-Based Anode Materials for Lithium-ion Batteries

17. C. Ban, 2017, Beyond Lithium-ion Symposium-10, IBM Research-Almaden: Surface modification for Magnesium metal for Magnesium metal-based batteries
18. C. Ban, International Battery Seminar & Exhibit 2017, Fort Lauderdale, FL, 2017: Reversible Magnesium chemistry in nitrile-and carbonate-electrolytes
19. C. Ban, 51st American Chemical Society's Midwest Regional Meeting (ACS-MWRM), Manhattan, KS, 2016: Structural evolution of lithium-ion electrodes during battery cycling
20. C. Ban, 2016, Department of Chemical and Biomolecular Engineering at University of Maryland: Surface modification for nanoscale silicon electrode materials
21. C. Ban, 11th U.S.-China Electric Vehicle and Battery Technology Meeting, Denver, Colorado, 2016: Development of silicon anode for high-energy Li-ion batteries
22. C. Ban, 2016, Department of Chemical and Materials Engineering at University of Kentucky: Surface modification for Silicon-based alloy materials
23. C. Ban, 249th ACS National Meeting, Denver, Colorado, 2015: Investigation of atomic/molecular layer deposition coatings for Li-ion electrode
24. C. Ban, International Battery Association and Pacific Power Source Symposium Joint Meeting 2015: Molecular Layer Deposition Coatings for Silicon Anodes
25. C. Ban, 40th Annual symposium AVS, East Lansing, Michigan, 2014: Surface modification of silicon anodes for advanced Li-ion batteries
26. C. Ban, 247th ACS National Meeting, 2014, Dallas, Texas: Understand the effect of conformal coatings on electrochemical performance and interfacial chemistry of Si anodes
27. C. Ban, THERMEC' 2013, Las Vegas, USA: Atomic Layer Deposition for Stabilization of Si Anodes for Lithium-ion Batteries
28. C. Ban, Materials Research Society 2012 Fall Meeting, Boston, MA: Atomic Layer Deposition of Al2O3 for Highly Improved Performance in Li-ion Battery Electrodes
29. C. Ban, 2012 Energy Materials Nanotechnology, Las Vegas: Effects of Al2O3 coating for Performance of Li-ion Battery Electrodes
30. C. Ban, International Battery Association-Pacific Power Source Symposium, 2012, Hawaii: Electrochemical and In-situ Structural Study of Coated Li[NMC]O_2 Cathodes for Durable High-voltage Cycling
31. C. Ban, 10X Advanced Battery R&D, 2012, Santa Clara, CA: Improving Electrochemical Performance of Li-ion Electrodes via Advanced Surface Modification
32. C. Ban, Materials Research Society 2011 Spring Meeting, San Francisco, CA: Carbon Nanotube Functionalized Li-ion Electrodes for Enhanced Rate Capability and Durability; Coating electrode materials by atomic layer deposition for Li-ion batteries
33. C. Ban, APS March Meeting 2011, Dallas, Texas: (1) Charge-Driven Structural Transformation and Valence Versatility of Boron Sheets in Magnesium Borides; (2) Electronic structure of lithium borocarbide as a cathode material for a rechargeable Li-ion battery: First-principles calculation
34. C. Ban, 5th International Conference on Polymer Batteries and Fuel Cells, August 2011, Argonne, Illinois, USA. "Atomic Layer Deposition Coating form Improved Electrical Energy Storage"

35. C. Ban, Materials Research Society 2010 Fall Meeting, Boston, CA: (1) Electrochemical and Structural Evaluation of the Effect of SWNTs on a $LiNi_{0.4}Mn_{0.4}Co_{0.2}O_2$ Cathode; (2) Atomic Layer Deposition Coatings Improve Electrode Architectures for Lithium-ion Batteries
36. C. Ban, 218th ECS Meeting, October, 2010, Las Vegas, NV: High-Capacity and High-Rate Anodes for Li-Ion Batteries
37. C. Ban, Materials Research Society 2010 Spring Meeting, San Francisco, CA: Effect of Surface Coatings on Electrochemical Behavior of Li-ion Materials
38. C. Ban, Materials Research Society 2009 Fall Meeting, Boston, Massachusetts: Nanostructured Fe3O4-SWNT Electrode
39. C. Ban, 216th ECS Meeting, October, 2009, Vienna, Austria: High Energy Density Metal Oxide Anodes for Li-ion Batteries

TEACHING ACCOMPLISHMENTS

Class Taught at Cu Boulder

Chemistry MCEN 1024 (3 credits, undergraduate student class, 120 students)	Fall 2021
Characterization for Energy Materials (3 credits, graduate student class)	Spring 2021
Chemistry MCEN 1024 (3 credits, undergraduate student class)	Fall 2020
Characterization for Energy Materials (3 credits, graduate student class)	Spring 2020

Class Taught at NREL

Batteries and Energy Storage 101	Spring 2016

SERVICE ACTIVITIES

Department Service at CU Boulder

Member, Department of Paul M. Rady Mechanical Engineering Graduate Committee (2019-2021)
Member, Materials Science & Engineering Program Graduate Program Committee (2020-2021)
Member, Materials Science & Engineering Program Executive Committee (2021-present)

College Service at CU Boulder

Member, College of Engineering and Applied Sciences Searching Committee (2021-present)

Committees and Review Activities

2012-present Professional Memberships: Electrochemical Society; Materials Research Society

Meetings Organized

2021	Lead organizer for 239 ECS meeting with the 18th International Meeting on Chemical Sensor May 30-June 3, 2021, Chicago, Symposium "Lithium-ion Batteries"
2018	General Chair and co-organizer for "2018 Beyond Li-Ion Symposium XI", Westlake, OH
2016	Organizer, US-China Electric Vehicle and Battery Technology Meeting, Denver, CO
2013	General Chair and co-organizer for "2013 Beyond Li-Ion Symposium VI", Boulder, CO; and

Journal Editorship

2021-Present	Editor in ECS Focus Issue on Energy Storage Research in China
2017-Present	Board member and Editor for "Institute of Engineering and Technology (IET)", a Charity registered in England & Wales and Scotland, UK, 2017-present;
2016-Present	Editorial Advisory Board Member for "Sustainable Energy & Fuels"
2013-2015	Editor: Nanoscience and Nanoengineering

Editorial Reviewer

Science; Nature Chemistry, Nature Materials; Joule; Angewandte Chemie; Chemistry of Materials; Chemical Reviews; Chemical Physics; Advanced Materials, Advanced Energy Materials; Advanced Functional Materials; Energy & Environmental Science; Journal of the Materials Research Society; Journal of the Electrochemical Society; ACS Applied Materials and Interfaces; ACS Applied Energy; Journal of Physical Chemistry Letters; Energy Storage Materials

Proposal/Program Reviewer

National Science Foundation, Department of Energy, Office of Science, Petroleum Research Fund, Small Business Innovation Research, Research Corporation for Science Advancement, Qatar National Research Fund, Israel Science Foundation

Services to Public

2015-2018	Volunteer, Role model in Girls and Science, Denver Museum of Science & Nature, Denver, CO