

CURRICULUM VITAE

University of Idaho

NAME: Lili Cai

DATE: 12/03/2021

RANK OR TITLE: Assistant Professor

DEPARTMENT: Forest and Sustainable Products Program; Department of Forest, Rangeland, and Fire Sciences

OFFICE LOCATION AND CAMPUS ZIP: CNR 203C, MS 1133

OFFICE PHONE: 208-885-8638

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WEB:    

DATE OF FIRST EMPLOYMENT AT UI: 08/19/2019

DATE OF TENURE: untenured

DATE OF PRESENT RANK OR TITLE: August 2019

EDUCATION BEYOND HIGH SCHOOL:

Degrees:

June 2016 – May 2019 Ph.D., Mississippi State University, Starkville, MS, Wood and Wood Composite Protection
Sept. 2012 – June 2015 MSE, Fujian Agriculture and Forestry University, Fuzhou, China, Forest Engineering
Sept. 2008 – June 2012 B.Eng., Fujian Agriculture and Forestry University, Fuzhou, China, Wood Science and Engineering

EXPERIENCE:

Teaching, Extension and Research Appointments:

Aug. 2019 - present *Assistant Professor*, Department of Forests, Rangeland, and Sciences, University of Idaho, Moscow, ID
May 2019 – July 2019 *Intermittent worker*, Department of Sustainable Bioproducts, Mississippi State University, Starkville, MS
June 2016 – May 2019 *Graduate Research Assistant*, Department of Sustainable Bioproducts, Mississippi State University, Starkville, MS
Sept. 2012 – May 2016 *Graduate Research & Teaching Assistant*, College of Material Engineering, Fujian Agriculture and Forestry University, Fuzhou, China

Academic Administrative Appointments: --

Non-Academic Employment including Armed Forces: --

Consulting: --

TEACHING ACCOMPLISHMENTS:

Areas of Specialization: Wood Science

Courses Taught:

RMAT 450 Biomaterials Deterioration and Protection (Spring 2020 / Enrollment of 13)
FSP 401 Undergraduate Research (Spring 2021 / Enrollment of 1)

Students Advised:

Graduate Students:

Currently advising - major professor:

Courage Alorbu, MS., Natural Resources, University of Idaho, Spring 2020-

Advised to completion of degree - major professor:

Ogu Osinanna Johnson, MS., Natural Resources, University of Idaho, Fall 2019 - Summer 2021

Chi-Jui Kuo, MS., Natural Resources, University of Idaho, Fall 2019 - Summer 2021

Served on graduate committee:

Dikshya Pkhrel, M.S., Natural Resources, University of Idaho, Fall 2020

Gurkeerat Kukal, M.S., Natural Resources, University of Idaho, Spring 2021

Endalkachew Mengistie, PhD, Environmental Science, University of Idaho, Spring 2019-

Lucky Ewurum, M.S., Environmental Science, University of Idaho, Fall 2019-

Muhammad Aamir Bashir, PhD, Biological Engineering, University of Idaho, Spring 2021- Fall 2021

Undergraduate Students:

Undergraduate Students currently in advising:

Joshua Thomas Carey, B.S., Forest and Sustainable Products, University of Idaho, Spring 2020-

Cameron C Birch, B.S., Forest and Sustainable Products, University of Idaho, Fall 2020-

Erik F Brackebusch, B.S., Forest and Sustainable Products, University of Idaho, Spring 2021-

Visiting Scholars Hosted:

Tingsong Liu, Zhejiang Forestry and Agriculture University, 2020

Chencheng Zhao, Zhejiang Forestry and Agriculture University, 2020

Post-Doctoral Scholars:

Dr. Abdulbaset Alayat (Co-advise with Dr. Armando Gabriel McDonald), June 2021-

Others

Laura Wommack, Science Teacher, Mansfield High School, Summer 2021

Materials Developed: --

Courses Developed:

FPS 204 Forest and Sustainable Products for a Green Planet

Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.: --

RMAT 499 Directed Study: Timber Protection (Spring 2020 / Enrollment of 1)

FSP 502 DS: Wood Microbiology (Fall 2020 / Enrollment of 3)

FSP 499 DS: Infrared spectroscopy in Biomaterial Deterioration (Spring 2021 / Enrollment of 1)

Undergraduate Research Experience course (NR 211) Guest lectures Fall 2019/2020/2021

Undergraduate Research Experience project (NR 212)

--Mackenzie Nelson, Bio-incising for Improved Permeability of Douglas Fir, Spring 2010

--Rowdy Claycomb, Maillard Reaction as a Potential Solution for Wood Protection, Spring 2021

--William Shook, Potential of Potato Peel Waste Extracts for Wood Protection, Spring 2021

Honors and Awards: --

SCHOLARSHIP ACCOMPLISHMENTS:

Publications, Exhibitions, Performances, Recitals:

Refereed/Adjudicated: (i.e. books, book chaps., journals, proc., abstr., etc.; provide citations-author, date, title, publisher) --

Peer Reviewed/Evaluated: (i.e. journals, articles, proceedings, abstracts, etc.)

1. Liu, T.; Zhang, W.; Wang, J.; Zhang, Y.; Wang, H.; Sun, F.; **Cai, L. (2020)** Improved Dimensional Stability and Mold Resistance of Bamboo via In Situ Growth of Poly (Hydroxyethyl Methacrylate-N-Isopropyl Acrylamide). *Polymers*, 12, 1584.
2. **Cai, L.**, Lim, H., Kim, Y., & Jeremic, D. (2020). β -Cyclodextrin-allyl isothiocyanate complex as a natural preservative for strand-based wood composites. *Composites Part B: Engineering*, 108037.

3. **Cai, L.**, Lim, H., Fitzkee, N., Cosovic, B., Jeremic, N. (2020) Feasibility of Manufacturing Strand-Based Wood Composite Treated with β -Cyclodextrin-Boric Acid for Fungal Decay Resistance. *Polymers*, 2020, 12.2: 274.
4. **Cai, L.**, Lim, H., Nicholas, D. D., & Kim, Y. (2020). Bio-based preservative using methyl- β -cyclodextrin-essential oil complexes for wood protection. *International Journal of Biological Macromolecules*, 147, 420-427.
5. **Cai, L.**, Jeremic, N., Lim, H., Kim, Y., β -cyclodextrins as sustained release carriers for natural preservatives (2019), *Industrial Crops and Products* 130, 42-48.
6. **Cai, L.**, Chen, T., Wang, W., Huang, D., Wei, Q., Lin, M., & Xie, Y. (2016). Optimization of aluminum/silicon compounds on fire resistance of old corrugated container fiber foam material. *BioResources*, 11(3), 6505-6517.
7. **Cai, L.**, Zhuang, B., Hang, D., Wang, W., Niu, M., Xie, Y., Wang, A. (2016). Ultra-low-density fibreboard with improved fire retardancy and thermal stability using a novel fire-resistant adhesive. *BioResources*, 11(2), 5215-5229.
8. **Cai, L.**, Fu, Q., Niu, M., Wu, Z., & Xie, Y. (2016). Effect of chlorinated paraffin nanoemulsion on the microstructure and water repellency of ultra-low-density fiberboard. *BioResources*, 11(2), 4579-4592.
9. Chen, T., Xie, Y., **Cai, L.**, Zhuang, B., Wang, X. A., Wu, Z., Lin, M. (2016). Mesoporous Aluminosilicate Material with Hierarchical Porosity for Ultralow Density Wood Fiber Composite (ULD_WFC). *ACS Sustainable Chemistry & Engineering*, 4(7), 3888-3896.
10. Chen, T., Niu, M., Wu, Z., **Cai, L.**, & Xie, Y. (2015). Fire performance of Si-Al ultra-low density fiberboards evaluated by cone calorimetry. *BioResources*, 10(2), 3254-3264.
11. Chen, T., Niu, M., Xie, Y., Wu, Z., Liu, X., **Cai, L.**, & Zhuang, B. (2015). Modification of ultra-low density fiberboards by an inorganic film formed by Si-Al deposition and their mechanical properties. *BioResources*, 10(1), 538-547.
12. Wu, Z., Xie, Y., Chen, T., & **Cai, L.** (2015). Effects of synergistic flame retardancy of zinc borate and chloroparaffin on ultra-low-density wood-fiber-based material. *Journal of Fujian Agriculture and Forestry University (Natural Science Edition)*, 44 (5), 548-553
13. **Cai, L.**, Xie, Y., Zhuang, Q., & Niu, M., (2014). Effects of polysilicate aluminum sulfate on fire resistance of ultra-low-density materials. *Journal of Beijing Forestry University*, 36(5), 136-141
14. Niu, M., Hagman, O., Wang, X. A., Xie, Y., Karlsson, O., & **Cai, L.** (2014). Effect of Si-Al compounds on fire properties of ultra-low density fiberboard. *BioResources*, 9(2), 2415-2430.
15. **Cai, L.**, Fu, Q., Xie, Y., Zhou, J. (2014). Preparation of cellulose acetate optimized by response surface analysis. *Journal of Fujian College of Forestry*, 34 (1), 92-96
16. Zhou, J., Xie, Y., Wu, Z., **Cai, L.** (2014) Study on the characterization and thermostability of foam materials of organic-inorganic hybrid ultra-low density wood fiber. *Wood Processing Machinery*, (3), 8-11

Other: (reports, proceedings, papers, citations and references, performances) --

Refereed/Adjudicated (currently scheduled or submitted): (provide citations) --

Peer Reviewed/Evaluated (currently scheduled or submitted):

1. **Cai, L.**, Lim, H., et al, Adhesion performance of one-component polyurethane in cross-laminating southern pine wood treated with Micronized Copper Azole - Type C (MCA-C), *European Journal of Wood and Wood Products* (Accepted)
2. Alorbu, C., ^ **Cai, L.**, Fungal Resistance and Leachability of Genipin-Crosslinked Chitosan Treated Wood, *International Biodeterioration & Biodegradation* (Submitted)
3. Ming Sun, Zhao, C., Alorbu, C., ^, Yu Y, **Cai, L.**, Antique Wood Preparation by Inorganic Salt Treatment and Its Performance, *Wood and Fiber Science* (Submitted)
4. Kuo, C., ^ **Cai, L.** Epsilon Poly L-lysine (EPL) Application for Wood Protection (scheduled)
5. Kuo, C., ^ **Cai, L.** Revisiting Soil Effect on Soil Block Test (Scheduled)

Presentations and Other Creative Activities: (i.e. slide sets, web pages, video productions, etc.,

provide date and location) --

Professional Meeting Papers, Workshops, Showings, Recitals:

*Posters/ presentations (^ Graduate students, * Undergraduate students)*

1. **Cai, L.**, Artificial Intelligence in Green Building Materials Protection? University of Idaho Artificial Intelligence Workshop, October 14, 2021 ([Presentation](#))
2. Kuo, C.,[^] **Cai, L.**, In Vitro Antifungal Activity of Epsilon Poly L-lysine against Wood-Decaying Fungi, 117th American Wood Protection Association Annual Meeting, Nashville, Tennessee USA July **2021** ([Presentation](#))
3. Alorbu, C.,[^] Carey J.,* **Cai, L.**, Antifungal and Fire Resistance of Lauric Arginate Treated Wood. 117th American Wood Protection Association Annual Meeting, Nashville, Tennessee USA July **2021** ([Presentation](#))
4. Kirker, G., Ohno, K., Tang, J., and **Cai, L.**, Culture Maintenance of Typical Wood Decay Fungi Used in Soil Block Tests, 117th American Wood Protection Association Annual Meeting, Nashville, Tennessee USA July **2021** ([Presentation](#))
5. Carey J.,* Alorbu, C.,[^] **Cai, L.**, Effect of Lauric Arginate on the Growth and Morphology of Wood-Decaying Fungi, Idaho Conference on Undergraduate Research, Virtual, July 2021(Poster)
6. Alorbu, C.,[^] **Cai, L.**, In vitro Antifungal Properties of Genipin-Crosslinked Chitosan against Wood Decay Fungi, 75th Forest Products Society International Convention, Virtual, June **2021** (Poster)
7. Johnson, O.,[^] **Cai, L.**, Potato Peel Waste Extracts for Wood Protection, 75th Forest Products Society International Convention, Virtual, June **2021** (Poster)
8. Kuo, C.,[^] **Cai, L.** Revisit Soil Effect on Soil Block Test, 75th Forest Products Society International Convention, Virtual, June **2021** (Poster)
9. Claycomb, R.,* **Cai, L.**, Maillard Reaction as a Potential Solution for Wood Protection, University of Idaho Undergraduate Research Symposium, Virtual, April **2021** (Poster)
10. Shook, W.,* Johnson, O.,[^], **Cai, L.**, Potential of Potato Peel Waste Extracts for Wood Protection, University of Idaho Undergraduate Research Symposium, Virtual, April **2021** (Poster)
11. Carey J.,* **Cai, L.**, In Vitro Antifungal Activity of Lauric Arginate against Wood-decaying Fungi. University of Idaho Undergraduate Research Symposium, Virtual, April **2021** (Poster)
12. Nelson, M.,* **Cai, L.**, Bio-incising for Improved Permeability of Douglas Fir, University of Idaho Undergraduate Research Symposium, Virtual, April **2020** (Poster)
13. **Cai, L.**, Jeremic, N., Lim, H., Kim, Y., β -Cyclodextrin-Allyl Isothiocyanate Complex as a Natural Preservative for Oriented Strand Board, 61st Joint Convention of Society of Wood Science and Technology (SWST) and Japan Wood Research Society (JWRS), Nagoya University, Japan, November **2018** ([Presentation](#))
14. **Cai, L.**, Jeremic, N., Lim, H., Kim, Y., β -cyclodextrin-allyl isothiocyanate complex as a natural preservative for oriented strand board, 61st Joint Convention of Society of Wood Science and Technology (SWST) and Japan Wood Research Society (JWRS), Nagoya University, Japan, November **2018** ([Poster](#))
15. **Cai, L.**, Jeremic, N., Lim, H., Kim, Y., Effect of β -cyclodextrins/allyl isothiocyanate complexes on fungi resistance of southern yellow pine, 114th American Wood Protection Association Annual Meeting, Seattle, WA, April **2018** ([Presentation](#))
16. **Cai, L.**, Jeremic, N., Lim, H., Kim, Y., "Effect of β -cyclodextrin/boric acid complexes on setting behavior of pMDI resin in oriented strand board production, 11th International Conference on Wood Adhesives, Atlanta, GA, October **2017** ([Poster](#))
17. **Cai, L.**, Jeremic, N., Wood preservation by β -cyclodextrin boric acid complex, 71st Forest Products Society International Convention, Starkville, MS, June **2017** ([Poster](#))
18. **Cai, L.**, Xie, Y., Zhuang, Q., & Niu, M., Effects of polysilicate aluminum sulfate on the fire resistance of ultra-low density materials, 14th Chinese Society of Wood Science Conference, Manzhouli, Inner Mongolia, July **2014** ([Presentation](#))

Patents:

1. Xie, Y., Wu, Z., Zhuang, Q., Chen, T., Zhuang, B., **Cai, L.** (2014). Preparation of ultra-light foam material by using vinyl chloride-vinylidene chloride copolymer emulsion. C.N. Patent No. 104072085A.

- Xie, Y., **Cai, L.** Wu, Z., Zhuang, Q., Chen, T., Zhuang, B. (2014) Biodegradable ultra-light foam with enhanced fire resistance. C.N. Patent No.104120635B.

Grants and Contracts Awarded:

Internal Grants

- Lili Cai (PI)**, University of Idaho Operation: Resubmission Support, \$11,739, 03/15/2021 to 06/30/2021
- Lili Cai (PI)**, USDA NIFA McIntire-Stennis (Startup) IDAZ050720, \$200,000, Development of “Green” Wood Protection Chemicals, 10/16/2019 to 10/15/2022

External Grants

- Michael Maughan, Carolina Manrique Hoyos, **Lili Cai (Co-PI)**, Ahmed Ibrahim, Brian Via, NSF RII Track-2 FEC: Developing a Circular Bio-based Framework for Architecture, Engineering and Construction Through Additive Manufacturing, \$3,974,309, 10/01/2021 to 09/30/2025
- Lili Cai (PI)**, Armando McDonald, USDA NIFA AFRI IDAZ050720, \$329,888, Hybridizing Wood and Zinc Oxide-Eugenol Cement towards High-performance Building Materials, 05/01/2021 to 04/30/2024
- Lili Cai (PI)**, M. J. Murdock Charitable Trust - Partners in Science 202016467, \$19,000, Lignin based coating by enzymatic polymerization for improved fire performance of building materials, 06/01/2021 to 09/01/2022
- Damon Woods, **Lili Cai (Co-PI)**, Armando McDonald, Idaho Dept. Commerce IGEM, \$206,624, Testing new manufacturing methods of natural fiber insulation batts, 06/01/2021 to 05/31/2022

Contracts

- Lili Cai (PI)**, University of Idaho Biomaterial Deterioration and Protection Lab Services Center, FY2021 (\$8,007)

Pending Grant Proposal

- Lili Cai (PI)**, USDA NIFA Phytic Acid Based Bio-fire Retardants for Green Wood Building Materials Protection, \$300,000, 07/01/2022 to 06/31/2024
- Lili Cai (PI)**, Inna Popova, Armando McDonald. NSF, Developing Bio-based preservatives from Potato Peel Wastes for Green Wood Building Material Protection, \$579,836, 01/15/2022 to 01/14/2025

Honors and Awards:

- Advised student Courage Alorbu obtained 1) Student travel fellowship, 2021 117th American Wood Protection Association Annual Meeting, 2021; 2) Student Scholarship, 2021 75th Forest Products Society International Convention, Virtual.
- Advised student Chi-Jui Kuo obtained 1) Student travel fellowship, 2021 117th American Wood Protection Association Annual Meeting, 2021; 2) Student Scholarship, 2021 75th Forest Products Society International Convention, Virtual.
- Student travel award, 61st Joint Convention of Society of Wood Science and Technology (SWST) and Japan Wood Research Society (JWRS), 2018
- Honorable mention award of student poster competition, 61st Joint Convention of SWST and JWRS, 2018
- Student travel fellowship, 114th American Wood Protection Association Annual Meeting, 2018
- 1st place winner of student poster competition, 11th International Conference on Wood Adhesives, 2017
- 2nd place winner of student poster competition, 71st Forest Products Society International Convention, 2017

SERVICE:

Major Committee Assignments: --

Fall 2021	Search committee for faculty position in Natural Resources Policy and Management
Fall 2020 – present	UI Research Council
Fall 2020	FRFS Promotion and Tenure Committee
Fall 2019	CNR Diversity & Inclusion Committee

Professional and Scholarly Organizations

Memberships:

2020-	International Research Group on Wood Protection
2018-	American Wood Protection Association
2018-	International Society of Wood Science and Technology
2016-	Forest Product Society

Peer-reviewed for:

- ACS Sustainable Chemistry & Engineering
- American Journal of Construction and Building Materials
- Applied Science
- Arabian Journal of Chemistry
- ES Food & Agroforestry
- Forests
- Forest Product Journal
- Holzforschung
- Industrial Crops and Products
- International Biodeterioration & Biodegradation
- Journal of Open Innovation: Technology, Market, and Complexity
- Transactions of the ASABE
- SWST conference proceedings 2019
- Wood and Fiber Science

Served on review panel for:

- 2020 NSF Graduate Research Fellowship Program (GRFP)
- 2021 USDA NIFA ARFI Nanotechnology for Agricultural and Food Systems

Outreach Service: --

- 2020/2021 Actively participate in CNR students recruiting through phone calls, postcard writing
- 2021 July “Meet an Prof” at Idaho Conference on Undergraduate Research
- 2021 September Faculty Success Seminar Series: M. J. Murdock Charitable Trust - Partners in Science Experience Sharing

Community Service: --**Honors and Awards: --****PROFESSIONAL DEVELOPMENT:****Teaching:**

- 2019 How to Create Interactive Presentations and Slideshows, 2019 UI Fall CETL Workshop Series
 Defusing the Bias Bomb in Class: Applied Strategies, UI
 No Impression Like a First (and Lasting) Impression: The Graphic Syllabus, UI
 Teaching for Learning: Identifying and Refining Pedagogies that Work for You and Your Students, UI
 “Best Practices in Online Instruction”, Center for Teaching and Learning, Mississippi State University
- 2017 Certification of Heart saver CPR, AED & First Aid

Scholarship:

- 2021 Planning and Writing Successful Grant Proposals Series
 Idaho is an EPSCoR State - What This Means for Supporting Your Research
 How to Develop and Deliver an Effective Pitch
 Assessing Your Grant Readiness
 Early Career Faculty Research - Grant Programs
 USDA NIFA AFRI: Tips for Getting Started with Your Next Proposal
 Developing Data Management Plans - Best Practices and Resources
 Equipment Grant Programs: An Overview
- 2020 Spring 2020 Proposal Development Academy, University of Idaho
 Creating research diagrams, University of Idaho
 NSF: Broader Impacts Really Do Matter!
 NSF: Understanding Proposal Review
 Being an Excellent Proposal Reviewer: Efficiency, Effectiveness, and Service to the Community, AAAS

- Designing Evaluation Plans for Research Projects to Strengthen Implementation and Outcomes, AAAS
Lessons Learned from 10,000 Proposal Reviews: Top Reviewer Criticisms and How to Avoid Them, AAAS
Putting your Best Foot Forward: Presenting Yourself and Your Science for Career Success” by Dr. Beth Russell, American Chemical Society-Idaho webinar series
NSF Funding Opportunities Explained: NSF CAREER and NSF EPSCoR Track-2, Track-4 by Kelvin Chu, The Implementation Group
- 2019 “Broad Impact 101 Workshop”, University of Idaho
- 2016 “Writing your first grant proposal”, Mississippi State University
“USDA Mock Panel Review Do’s and Don’ts of Writing USDA Grants”, Mississippi State University

Outreach:

- 2019 The Miracle at Work Forest Tour, North Idaho

Administration/Management:

- 2019 to present
- Purchasing Card Program & Travel Expense Training
 - Chrome River Travel and Expense Training
 - Creating a Respectful Community
 - Diversity and Inclusion
 - IT Security Awareness
 - UI Stewardship of Resources & Ethical Conduct
 - Defensive Driving Course
 - Fire Extinguisher Use
 - Laboratory Safety
 - Hazard Communication – The New GHS Standards