

EMMANUEL OHEMENG

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PROFESSIONAL SUMMARY

Wood Technologist and Doctoral Researcher specializing in Life Cycle Assessment (LCA), TEA, Whole-Building LCA (WBLCA), Building Energy Modeling (BEM), and biogenic carbon accounting for advanced bio-based construction materials. Proven ability to manage complex projects, communicate across interdisciplinary teams, and translate technical research into actionable insights.

EDUCATION

University of Maine | Orono, ME, USA (2025-Present)

PhD in Ecology and Environmental Sciences

- **Research Focus:** Life Cycle Analysis, Whole-Building Life Cycle Assessment (WBLCA) of Wood-Fiber Insulated Modular Single-Family Residential Buildings, Embodied & Operational Carbon/Energy Modeling, Biogenic Carbon Accounting, Techno-Economic Analysis (TEA), EPD Analytics.
- **Research Centers:** Advanced Structures and Composites Center (ASCC) & Wood Science and Technology Laboratory.

University of Massachusetts Amherst | Amherst, MA, USA (2024 – 2025)

MSc in Sustainable Building Systems

- **Research Focus:** Geopolymer composites, Material Characterizations using FTIR, XRD, SEM, Mass Timber Engineering and Bio-based Materials, and Passive & Sustainable Designs
- **Thesis:** Hempcrete Modification and Characterization for Sustainable Building

Rosenheim University of Applied Sciences | Rosenheim, Bayern, Germany (2018 –2021)

MSc in Wood Technology

- **Key Focus:** Engineered Wood Products, Systems Engineering, Industrial Process Optimization, Automation & Simulation, Project Management.

Kwame Nkrumah University of Science and Technology (KNUST) | Kumasi, Ghana (2010-2014)

BSc in Natural Resources Management

RESEARCH & PROFESSIONAL EXPERIENCE

Graduate Research Assistant | *Advanced Structures & Composites Center, University of Maine (2025– Present)*

- **U.S. DOE Wood-Fiber Insulated Panels (WIPs) Project:** Co-lead LCA and carbon modeling for a U.S. Department of Energy-funded initiative evaluating bio-based wood-fiber insulated panels for modular construction and energy retrofits across multi-stakeholder teams (3+ collaborating institutions).
- **Building Energy & Whole-Building LCA Modeling:** Constructing single-family residential thermal and analytical space models in Revit, BEopt, and DesignBuilder to simulate operational performance and integrate with Whole-Building Life Cycle Assessment (WBLCA) workflows.
- **LCA & EPD Comparative Analytics:** Compiled and synthesized Environmental Product Declarations (EPDs) for Wood-Fiber Insulation (WFI) and Cross-Laminated Timber (CLT) to evaluate life-cycle impact and biogenic variations across different manufacturers.
- **Techno-Economic Analysis (TEA) & Building Decarbonization:** Co-lead whole-building comparative TEA and energy modeling of WIP new construction and retrofits with IECC code-minimum single-family residences and Passive House standards to quantify capital costs, payback periods, and life-cycle carbon abatement potential.

Graduate Research Assistant | *Wood Mechanics Laboratory, University of Massachusetts Amherst (2024– 2025)*

- **Bio-based Material Characterization:** Conducted experimental research on lime pozzolan hempcrete and geopolymers composite formulations across varying curing conditions in collaboration with Hempstone and Allied Testing Laboratories.
- **Mass Timber Structural Testing:** Supported the fabrication and evaluation of Cross-Laminated Timber (CLT) assemblies through mechanical and structural testing to assess load performance and durability.
- **Teaching & Academic Mentorship:** Mentored undergraduate students in laboratory protocols and material testing procedures, while supporting departmental course instruction.

Assistant Operations Manager | *Forestry Commission of Ghana (2021 – 2024)*

- **Wood Tracking & Supply Chain System:** Co-led implementation and enforcement of a national Wood Tracking System, migrating to paperless tracking that curbed illegal logging and timber trafficking by 60%.

- **Products Promotion and Market Adoption:** Spearheaded the fabrication, mechanical testing and performance validation of underutilized timber species, driving their technical acceptance and commercialization for building and furniture applications.
- **Capacity Building and Technical Support:** Co-led capacity building and lean operational optimization programs to 15+ Small and Medium Forest Products Enterprises, driving a 70% increase in production.
- **Research & Governance Analytics:** Applied statistical models and intervention analysis to evaluate policy impacts (FLEGT-VPA and Plantation Policy) on timber supply chains and resource availability.

Intern / Technical Assistant | *Hochtief AG & Hoffmann Propeller GmbH, Germany (Aug 2019 – Sept 2020)*

- **Hochtief AG (Essen):**
 - Performed mechanical testing, and material durability evaluation on timber and concrete materials to ensure compliance with building specifications.
- **Hoffmann Propeller GmbH (Rosenheim):**
 - Co-led the design, fabrication of 10 internal transporter system for shopfloor propeller transit between processing units to optimize workflow efficiency.
 - Utilized CNC machining to design and fabricate bio-based composite propellers to achieve 100% production target.

TECHNICAL SKILLS & COMPETENCIES

IT Skills	Microsoft Office Tools (Word, Excel, PowerPoint, Access), Python, MATLAB, SPSS, SQL, R. Revit, PowerBi, SketchUp, Tableau, GIS
Laboratory Experience	Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD), X-Ray Fluorescence (XRF), FTIR Spectroscopy, Fabrication, Testing and Analysis
Soft Skills	Strong work ethics, communication and writing skills, team player and independent
Languages	English (Fluent), German (Basic), French (Basic)

SELECTED PUBLICATIONS

- Ohemeng, E., Musah, M., Tinibu, U. M., Clouston, P., & Zhang, G. (2026). *Physicomechanical and Chemical Performance of Lime–Pozzolan Hempcrete Under*

Varying Curing Conditions. Submitted to *Construction and Building Materials* (CONBUILDMAT-D-26-18440; SSRN Abstract: 7488629). (*In-Press*)

- Ohemeng, E., Musah, M., Clouston, P. et al. Impact of forest policy reforms on timber export performance in Ghana. *Discov. For.* 2, 44 (2026). <https://doi.org/10.1007/s44415-026-00105-9>
- Ohemeng, E. (2023). Technological properties of *Memecylon lateriflorum* wood: A timber species from Ghana. *Nativa*, 11(1).
- Ohemeng, E., et al. (2022). Functional Relationship Between Density and Mechanical Strength Properties of *R. heudelotii* from Two Ecological Regions in Ghana. *Spring Journals*.

IN-DRAFT

- Ohemeng, E., et al. Four working papers on Whole-Building LCA (WBLCA), biogenic carbon accounting/EPD variations in WFI and CLT, and energy-cost optimization of wood-fiber retrofits.

AWARDS, FELLOWSHIPS & LEADERSHIP

- Board of Trustee Graduate Representative & Graduate Student Government Member
- Spaulding Smith Fellow
- DAAD & Bavarian State Scholarship

PROFESSIONAL MEMBERSHIPS

- ACLCA – American Center for Life Cycle Assessment
- SWST – International Society of Wood Science and Technology
- ASTM International
- ISTF – International Society of Tropical Foresters

REFERENCES

1. Dr. T. Reed Miller | Assistant Professor, Civil and Environmental Engineering, University of Maine | +1 (585) 899-0353 | reed.miller@maine.edu
2. Dr. Munkaila Musah | Research Scientist, Viance, Treated Wood Solution | +1 (906) 231-3409 | mmusah@viance.com
3. Dr. Mohammed Nurudeen Iddrisu | International Tropical Timber Organization (ITTO) | (+233) 0244688411 | nurudeen15@yahoo.com