

LEONARD O. OHENHEN

Ph.D. Student in the Department of Geosciences, Virginia Tech., Blacksburg, VA

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EDUCATION

Virginia Tech.

Blacksburg, VA

Doctor of Philosophy (Ph.D.) (GPA: 4.00/4.00)

Expected Fall 2024

- **Research:** Understanding and predicting coastal flooding and related hazards
- Advisor: Dr. Manoochehr Shirzaei

University of Delaware

Newark, DE

Master of Science in Geological Sciences (GPA: 4.00/4.00)

June 2021

- **Thesis:** “Investigating Iron mineral transformation in Hydrocarbon contaminated sediments using detailed magnetic studies.”
- Advisors: Dr. Estella Atekwana and Dr. John Madsen

Federal University of Technology

Owerri, Nigeria

Bachelor of Technology in Geosciences (Geophysics option) (GPA: 4.70/5.00)

Feb. 2018

- **Thesis:** “Determination of Aquifer Hydraulic Parameters using Resistivity Method”

AWARDS & HONORS

- | | |
|---|-----------|
| • AGU Outstanding Student Presentation Award (OSPA) | Dec. 2022 |
| • SEG/David W. Worthington Scholarship (\$4,105) | Jun. 2022 |
| • GSA Research grant (\$2,000) | Jun. 2022 |
| • GSA G&G Division Allan Cox Student Research Award | Aug. 2022 |
| • Phi Kappa Phi Honor Society | May 2021 |
| • CEOE Graduate Student Research Symposium (Second Place) | Apr. 2021 |
| • AGU Fall Meeting Student Travel Grant (\$1,000) | Oct. 2020 |
| • NABG Best Poster Presentation (M.S. Category) | Sep. 2020 |
| • Overall Best Male Graduating Student in the University | Feb. 2018 |
| • Best graduating Student in the Department of Geology | Feb. 2018 |
| • Best student presentation, SEG–FUTO, Nigeria | June 2015 |

RESEARCH EXPERIENCE

Virginia Tech., Blacksburg, Virginia

Aug. 2021 – present

Research Assistant

- Processed and interpreted Interferometric Synthetic Aperture Radar (InSAR) and Global navigation satellite system data.
- Performed coastal flooding vulnerability using InSAR and LiDAR elevation data.
- Produced surface deformation map using multitemporal interferometric analysis of InSAR data.

University of Delaware, Newark, Delaware

Sep. 2019 – Aug. 2021

Research Assistant

- Performed magnetic studies using Vibrating Sample Magnetometer and Magnetic Properties Measurement Systems at the Institute of Rock Magnetism, UMN
- Processed First Order Reversal Curves (FORC) using FORCinel software
- Presented research findings to the USGS led Bemidji biogeophysics research team
- Assisted with conductivity survey at several agricultural fields in Maryland using Dualem 421-S

Boahj Engineering Solutions, Edo, Nigeria

May, 2019 – Aug. 2019

Engineering Geologist

- Performed engineering lab experiments – consolidation tests and sieve analysis.
- Built a template for plotting basic engineering graphs using Microsoft excel
- Prepared detailed reports and led team presentations

Federal University of Technology, Owerri, Nigeria

Apr. 2016 – Dec. 2016

Intern, Work Station Geology Department

- Generated GIS maps comparing aquifer productivity in Nigeria
- Performed radiometric survey to delineate sedimentary – basement contacts
- Assisted with resistivity survey to evaluate erosion sites in southeastern, Nigeria

Mojano Drilling Company, Edo, Nigeria

Apr. 2013 – Jan. 2014

Intern

- Assisted in a government funded borehole drilling project for rural communities without access to clean drinking water
- Collected and prepared core samples during drilling
- Performed downhole geophysical well-logging - gamma ray and resistivity logging

TEACHING EXPERIENCE

University of Delaware, Newark, DE

Sep. 2020 – Jan. 2021

Teaching Assistant

- Conducted weekly labs for 61 undergraduate students
- Graded weekly lab assignments and quizzes

Rivers State University, Rivers, Nigeria

May 2018 – Apr. 2019

Teaching Assistant/Corp member, Geology Department

- Taught undergraduate-level Geological mapping and Geographic Information Systems, to 58 students
- Developed and graded quizzes, exams, and homework
- Assisted in leading field trips to study limestone deposits in eastern Nigeria
- Assisted with revising the geophysical methods course curriculum to include azimuthal resistivity method

SKILLS

- **Programming Languages:** Matlab, Python, Julia, R, Fortran 2010
- **Packages:** Numpy, Pandas, SciPy, Matplotlib, Jupyter, CartoPy
- **Geology/Geophysics software:** Res2DInv, Res3DInv, QGIS, Surfer, FORCinel, MODFLOW
- **Graphics:** Microsoft Office Suite, Adobe Illustrator

PUBLICATIONS

Peer-reviewed Publication

1. **Ohenhen, L. O.**, Shirzaei, M., Ojha, C. & Kirwan, M. L. (2023). Hidden Vulnerability of US Atlantic Coast to Sea-level Rise due to Vertical Land Motion. *Nature communications* (In press)
2. Barnard, P. L., Befus, K. M., Danielson, J. J., Engelstad, A. C., Erikson, L. H., Foxgrover, A. C., Hardy, M. W., Hoover, D. J., Leijnse, T., Massey, C., McCall, R., Nadal-Caraballo, N., Nederhoff, K. M., **Ohenhen, L. O.**, O'Neill, A., Parker, K. A., Shirzaei, M., Su, X., Thomas, J. A., van Ormondt, M., Vitousek, S. F., Vox, K., and Yawn, M. C. (2023). Future coastal hazards along the U.S. North and South Carolina coasts: U.S. Geological Survey data release, <https://doi.org/10.5066/P9W91314>.
3. **Ohenhen, L. O.**, & Shirzaei, M. (2022). Land subsidence hazard and building collapse risk in the coastal city of Lagos, West Africa. *Earth's Future*, 10, e2022EF003219. <https://doi.org/10.1029/2022EF003219>
4. Ojo, O. O., **Ohenhen, L. O.**, Kolawole, F., Johnson, S. G., Chindandali, P. R., Atekwana E. A., & Laó-Dávila D. A. (2022). Under-Displaced Normal Faults: Strain Accommodation Along an Early-Stage Rift-Bounding Fault in the Southern Malawi Rift. *Front. Earth Sci.* 10, 846389. <https://doi.org/10.3389/feart.2022.846389>
5. **Ohenhen, L. O.**, Feinberg, J. M., Slater, L. D., Ntarlagiannis, D., Cozzarelli, I. M., Rios-Sanchez, M., et al. (2022). Microbially induced anaerobic oxidation of magnetite to maghemite in a hydrocarbon-contaminated aquifer. *Journal of Geophysical Research: Biogeosciences*, 127, e2021JG006560. <https://doi.org/10.1029/2021JG006560>
6. Khan, M. Y., Turab, S. A., Riaz, M. S., Atekwana, E. A., Muhammad, S., Butt, N. A., Abbas, S. M., Zafar, W. A., & **Ohenhen, L. O.** (2021). Investigation of coseismic liquefaction-induced ground deformation associated with the 2019 mw 5.8 mirpur, pakistan, earthquake using near-surface electrical resistivity tomography and geological data. *Near Surface Geophysics*, 19(2), 169–182. <https://doi.org/10.1002/nsg.12148>
7. Onyekuru, S. O., Ibeneme, S. I., **Ohenhen, L. O.**, & Akiang, F. (2019). Integrating Geoelectrical And Hydrogeological Data in Determining Aquifer Hydraulic Parameters of Ikeduru Area, Southeastern Nigeria: *J. of Geology & Earth Sci.* <https://doi.org/10.32937/IJGES.5.1.2019.56-72>

In review

1. **Ohenhen, L. O.**, Shirzaei, M., Barnard, P. (202?). Slowly but Surely: Widespread Exposure of Infrastructure and Communities to Land Subsidence on the US East Coast. Submitted to *Communications Earth & Environment*
2. **Ohenhen, L. O.**, Mayle, M., Kolawole, F., Ismail, A., Atekwana, E. A. (202?). Exploring for Groundwater in Sub-Saharan Africa: Insights from Integrated Geophysical Characterization of

CONFERENCE PAPERS & PRESENTATIONS

*PRESENTING AUTHOR

1. **Ohenhen, L. O.*** & Shirzaei, M. Disappearing Cities: Global Climate Change Induced Coastal Inundation on the US Atlantic Coast. Talk, *AGU Fall Meeting, Dec. 12 – 16, 2022*.
2. **Ohenhen, L. O.*** & Shirzaei, M. Slowly but Surely: Widespread exposure of Critical Infrastructures and Communities to Land Subsidence on the US East Coast. Talk, *AGU Fall Meeting, Dec. 12 – 16, 2022*.
3. Zhai, G., **Ohenhen, L. O.***, Ghobadi-Far, K., Carlson, G. Sherpa, S. F. Jui-Chi Lee, J-C. Khorrami, M., Zehsaz, S., Werth, S., & Shirzaei, M. Quantifying subsidence damage risk to infrastructures in 25 most populous US cities from the space. Poster, *AGU Fall Meeting, Dec. 12 – 16, 2022*.
4. **Ohenhen, L. O.*** & Shirzaei, M. Hotspots for Building Collapse due to Land Subsidence in the Coastal City of Lagos, West Africa. Poster, *National Association of Black Geoscientists 41st Annual Technical Conference, Sept. 7 – 10, 2022*.
5. **Ohenhen, L. O.***, Shirzaei, M. & Ojha, C. Measurements of Vertical Land Motion and underlying mechanisms along the US East Coast. Poster, *AGU Fall Meeting, Dec. 13 – 17, 2021*.
6. **Ohenhen, L. O.***, Feinberg, J. M., Stricker, A., Slater, L. D., Ntarlagiannis, D., Cozzarelli, I. M., Yokus, S., Rios-Sanchez, M., Isaacson, C. W., & Atekwana, E. A. Microbial Induced Anaerobic Oxidation of Magnetite to Maghemite in a Hydrocarbon-Contaminated Aquifer. Talk, *AGU Fall Meeting, Dec. 13 – 17, 2021*.
7. Oyewande O. Ojo, **Leonard O. Ohenhen**, Folarin Kolawole, Steven G. Johnson, Estella A. Atekwana, & Daniel A. Laó-Dávila. Under-Displaced Normal Faults: Strain Accommodation along an Early-Stage Rift-Bounding Fault in the Southern Malawi Rift. Poster, *AGU Fall Meeting, Dec. 13 – 17, 2021*.
8. **Ohenhen, L. O.***, Feinberg, J.M., Striker, A., Yokus, S., Isaacson, C., Rios-Sanchez, M., Ntarlagiannis, D., Slater, L.D., & Atekwana, E.A. Investigating Iron mineral transformation in Hydrocarbon contaminated sediments using detailed magnetic studies. Poster, *AGU Fall Meeting, Dec. 1 – 17, 2020*.
9. Joshua M. Feinberg, Estella A. Atekwana, **Leonard O. Ohenhen**, Beth Ann Fisher. Magnetic monitoring of environmental contamination and remediation. Talk, *AGU Fall Meeting, Dec. 1 – 17, 2020*.
10. **L. Ohenhen***, M. Mayle, F. Kolawole, A. Ismail, Atekwana, E.A. Investigating Groundwater Potential in Basement Aquifers using Resistivity Threshold, central Malawi. Talk, *GSA virtual Conference, Oct. 26 – 30, 2020*.
11. **L. Ohenhen***, M. Mayle, F. Kolawole, A. Ismail, Atekwana, E.A. Investigating Groundwater Potential in Basement Aquifers using Resistivity Threshold, central Malawi. Talk, *National Association of Black Geoscientists 39th Annual Technical Conference, Sept. 10 – 11, 2020*.

SYNERGISTIC ACTIVITIES

- Reviewer for Scientific Reports (IF: 4.996)
- Reviewer for Journal of African Earth Sciences (IF: 2.468)

LEADERSHIP & COMMUNITY SERVICE

- Volunteer, Colmar Academy, Nigeria (Coding for Kids) Dec. 2022
- SEG Secretary, Virginia Tech Oct. 2022 – Present
- Undergraduate Student Mentor Sep. 2022 – Present
- Moderator, Student conference at Virginia Tech. Mar. 2022
- Volunteer, Stormwater Day: Outreach for Montgomery Public School Apr. 2022
- Virginia Tech. booth at AGU Conference Dec. 2021
- Inclusive Blockchain Insurance using Space Assets (IBISA) May 2021 – Dec. 2021
- AGU Funded Undergraduate Scholarship Jun. 2021
- Course Representative, Department of Geosciences (FUTO) Jan. 2016 – Nov. 2018
- Debate Competition Judge Oct. 2013

PROFESSIONAL ORGANIZATIONS

- European Geosciences Union Jan. 2023 – Present
- American Geophysical Union Apr. 2020 – Present
- Geological Society of America Apr. 2020 – Present
- Society of Exploration Geophysicists Apr. 2020 – Present
- National Association of Black Geoscientists Apr. 2020 – Present
- Nigerian Association of Petroleum Explorationists Jan. 2017 – May 2021
- Nigerian Mining and Geosciences Society Nov. 2012 – Feb. 2018
- Society of Exploration Geophysicists (Nigerian Chapter) Mar. 2013 – Aug. 2014