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Research Interests

Near Surface Geophysics; Environmental Geophysics; Engineering Geophysics; Biogeophysics; Drone Geophysics; Hydrogeophysics; Computational Geophysics; Electrical Geophysics; Soil Mechanics

Appointments

Assistant Professor of Geophysics Binghamton University (SUNY), Department of Earth Sciences	2024 – present
Assistant Professor of Geophysics University of Oklahoma, School of Geosciences	2021 – 2024
Postdoctoral Research Associate Rutgers University – Newark	2019 – 2021
Teaching Assistant / Graduate Research Assistant Rutgers University – Newark	2015 – 2019
Mineral Exploration Engineer Pars Asia Peyjo Consultant Engineers	2011 – 2015

Education

Ph.D. in Environmental Sciences, Near Surface Geophysics Rutgers University – Newark	2019
M.Sc. in Petroleum Engineering, Drilling and Completion Shahrood University of Technology	2014
B.Sc. in Mining Engineering, Mining Exploration University of Tehran	2011

Grants and Awards

Total funded: \$887,475

Federal grants:

Lead PI, NASA (\$596,146 - active) Efficiency of geophysical methods for assessment of biogeochemical and mineralogical subsurface variation in extreme redox gradients - advancing tools to predict habitability in the subsurface. Co-PIs: Hodges, C., Elwood-Madden, M., Elwood-Madden, A.	2023 - 2026
Lead PI, NSF (\$204,935 - active) Acquisition of the IRIS instruments FullWaver device for monitoring active landslides in Oklahoma. Co-PI: Walter, J.	2023 - 2025

State grants:

Lead PI, Oklahoma Department of Transportation (\$49,899 - active) Assessment of Pavement Drainage Using Electromagnetic Induction Imaging Co-PIs: Zaman, M., Ali, S. A.	2023 - 2024
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Other grants:

The University of Oklahoma – Data Science Institute (\$6,500 - completed)	2022
Quantifying the availability of groundwater in underdeveloped rural areas from geophysical data	
Rutgers dissertation fellowship (\$20,000)	2019
Rutgers graduate student governing association (GSGA) travel grants (total of \$1,200)	2016, 2017 and 2018
Rutgers TA/GA Professional Development Fund (total of \$5,175)	2015, 2016, 2017 and 2018
Rutgers Summer travel award (\$1,000)	2017
SEG “Student Chapter Outreach grant” (\$1,870)	2016

Awards:

Best Paper Award – SAGEEP	2019
SEG “Certificate of Appreciation” for the role of student chapter president	2018
SEG “Near-surface research award” (\$750)	2017

Products and Publications**Patents:**

1. **Saneiyan, S.** (2023). System and method for locating undocumented orphaned oil and gas wells with a smartphone. (U.S. Patent Application #18/444,665). U.S. Patent and Trademark Office. *Pending*.

Software:

1. ResIPy (*open source*): multi-platform software for inversion and modeling of geophysical data (2D/3D – resistivity and induced polarization) – available at: <https://gitlab.com/hkex/resipy>
2. SIPy Studio (*closed source*): Spectral Induced Polarization (SIP) data analysis with GUI (1D – Cole-Cole and Debye decomposition inversions included) – available to try at: <https://sgs4d.com/product/sipy-studio/>
3. EMagPy (*open source*): Python software for inversion/modelling of frequency domain electromagnetic data (FDEM) - available at: <https://gitlab.com/hkex/emagpy>

Peer-reviewed journal articles (*represent mentored and advised students):

Published, in press or accepted:

14. **Saneiyan, S.**, Filippone, N., Colwell, F., & Ntarlagiannis, D. (2024). Tracking microbial movement in saturated media with spectral induced polarization. *Journal of Environmental Management*, 370, 122808.
13. **Saneiyan, S.**, Gimenez, D., Siegenthaler, E., & Slater, L. (2024). On the accuracy of saturation estimation from electrical measurements of soils with high swelling clay content. *Vadose Zone Journal*, e20340.
12. McKnight, J. G.*, & **Saneiyan, S.** (2024). 3D electrical resistivity survey for reduction of groundwater drilling uncertainties in a clay rich environment. *The Leading Edge*, 43(2), 117–124.
11. **Saneiyan, S.**, & Mansourian, D.*, (2023). Locating undocumented orphaned oil and gas wells with smartphones. *Journal of Applied Geophysics*, 219(December), 105224.
10. **Saneiyan, S.**, Mwakanyamale, K., Ntarlagiannis, D., Phillips, A., & Barklage, M., (2023). Unconsolidated sediment thickness mapping by waterborne geophysics along the Lake Michigan shoreline. *Journal of Great Lakes Research*, 102238.
9. Peshtani, K.*, Weller, A., **Saneiyan, S.**, & Slater, L. (2022). The influence of magnetic minerals on induced polarization measurements in sedimentary rocks. *Geophysical Research Letters*, 49, e2022GL100192.
8. **Saneiyan, S.**, & Slater, L. D. (2021). Complex conductivity signatures of unconfined compressive deformation and shear failure in soils, *Engineering Geology*, 291(May), 106219.
7. **Saneiyan, S.**, Ntarlagiannis, D., & Colwell, F. (2021). Complex conductivity signatures of microbial induced calcite precipitation, field and laboratory scales. *Geophysical Journal International*, 224(3), 1811-1824.
6. Ohan, J. A., **Saneiyan, S.**, Lee, J., Bartlow, A., Ntarlagiannis, D., Burns, S. E., & Colwell, F. S. (2020). Microbial and Geochemical Dynamics of an Aquifer Stimulated for Microbial Induced Calcite Precipitation (MICP), *Frontier Microbiology*, 11, 1327.

5. Blanchy, G., **Saneiyani, S.**, Boyd, J., McLachlan, P., & Binley, A. (2020). ResIPy, an intuitive open source software for complex geoelectrical inversion/modeling in 2D space, *Computers and Geosciences*, 137, 104423.
4. Boyd, J., Blanchy, G., **Saneiyani, S.**, McLachlan, P., & Binley, A. (2019). 3D Geoelectrical Problems with ResIPy, an Open Source Graphical User Interface for Geoelectrical Data Processing. *FastTIMES*, 24(4), 85-92.
3. Kessouri, P., Furman, A., Huisman, J. A., Martin, T., Mellage, A., Ntarlagiannis, D., Bückner, M., Ehosioké, S., Fernandez, P., Flores-Orozco, A., Kemna, A., Nguyen, F., Pilawski, T., **Saneiyani, S.**, Schmutz, M., Schwartz, N., Weigand, M., Wu, Y., Zhang, C., & Placencia-Gomez, E. (2019). Induced polarization applied to biogeophysics: recent advances and future prospects. *Near Surface Geophysics*, 17, 595-621
2. **Saneiyani, S.**, Ntarlagiannis, D., Ohan, J., Lee, J., Colwell, F., & Burns, S. (2019). Induced polarization as a monitoring tool for in-situ microbial induced carbonate precipitation (MICP) processes. *Ecol Eng.* 127, 36–47
1. **Saneiyani, S.**, Ntarlagiannis, D., Werkema, D. D., & Ustra, A. (2018). Geophysical methods for monitoring soil stabilization processes, *J. Appl. Geophys.*, 148, 234–244

Under review or in preparation:

3. Mansourian, D.*, **Saneiyani, S.** On the complex conductivity signatures of pore pressure variations in soils. *Engineering Geology. In review.*
2. Presa, L.*, Martin, D. A., Madden, A. S., Volz, J. S., & **Saneiyani, S.**, Spectral induced polarization for monitoring the hydration process of cements with Zeolites as a supplementary cementitious material, *In prep.*
1. McKnight, J.*, Ogwari, P., Walter, J. I., Ng, R., Mansourian, D.*, & **Saneiyani, S.**, Geophysical assessment on how near surface sediments impact seismic ground motion due to induced seismicity, *In prep.*

Non-peer-reviewed/interview/news:

2. **Saneiyani, S.**, & Weiss, C. J. (2023). Introduction to this special section: Orphaned and abandoned wells, *The Leading Edge*, 42, 796–797
1. **Saneiyani, S.** (2023). Geophysicists Create Economic Method to Locate Abandoned Wells, interviewed by Ken Milam (Explorer Correspondent), *AAPG Explorer Magazine*, July 2023.

Invited talks (excluding job talks):

12. Geophysical monitoring of microbial movement, *Seminar at the Department of Environmental Sciences at the University of Toledo*, October 2024.
11. Electrical response of soils under stress and pressure. *H014 - Advances in Petrophysics for Hydrogeophysics and Critical Zone Science at AGU Fall Meeting*, December 2023.
10. Airborne smartphone magnetometry for locating undocumented orphaned oil and gas wells. *October chapter meeting*, Wichita Chapter of the Society of Independent Professional Earth Scientists (SIPES), October 2023.
9. Every Day Geophysical Tools for Locating Legacy Wells. *Workshop 5: Drone Geophysics Applied to Legacy Oil and Gas Wells and Pipelines*, IMAGE, September 2023.
8. Cost effective drone surveys to locate undocumented orphan wells. *All-employees meeting at the Bureau of Land Management Oklahoma Field Office*, August 2023.
7. Introduction to ResIPy II: software demo and 3D electrical inversion, *Open-source software webinar series*, Society of Exploration Geophysicists, online, June 2023.
6. Finding orphan wells, a complicated problem with an easy solution. *Colloquium at the School of Geosciences*, University of Oklahoma, April 2023.
5. Geophysical Methods for Monitoring Soil Stabilization by Microbial Induced Carbonate Precipitation. *Workshop 1 – Biogeophysics*, SAGEEP, March 2023.
4. Introduction to ResIPy I: software demo and 2D electrical inversion, *Open-source software webinar series*, Society of Exploration Geophysicists, online, February 2023.
3. Accuracy of Archie's law for clayey soils with high swelling capacity, *IMAGE 2022*, Houston, TX, USA.

2. Soil Stabilization process using bioagent and its monitoring using geophysical method, *International Virtual Course (IVC) Geophysics for Engineering and Environment*, Faculty of Mining and Petroleum Engineering, Bandung Institute of Technology, Bandung, Indonesia. September 6-17, 2021.
1. ResIPy: an open-source software for inversion and modeling of geoelectrical measurements, *Department of Geophysics, the University of São Paulo, Brazil*, November 2020.

Conference papers/presentations/abstracts:

30. McKnight, J., Ogwari, P., Hodges, C., Ng, R., & **Saneiyani, S.**, (2023). Near surface induced seismic response analysis utilizing geoelectrical measurements and HVSR, In *36th Symposium on the Application of Geophysics to Engineering and Environmental Problems*, SAGEEP 2024
29. Presa, L., **Saneiyani, S.**, Madden, A.S., & Martín, D.A., (2023). Use of complex conductivity in the monitoring of sustainable cements with supplementary cementitious materials, In *AGU Fall Meeting 2023*. AGU
28. McKnight, J., Ogwari, P., Hodges, C., Ng, R., & **Saneiyani, S.**, (2023). Near surface induced seismic response analysis utilizing geoelectrical measurements and HVSR, In *AGU Fall Meeting 2023*. AGU
27. Mansourian, D., **Saneiyani, S.**, (2023). Exploring complex conductivity signatures of soils in response to pore pressure variations, In *AGU Fall Meeting 2023*. AGU
26. Mansourian, D., **Saneiyani, S.**, (2023). Locating undocumented orphaned oil and gas wells using geophysical techniques and smartphone magnetometry, In *IMAGE 2023*, September 2023. SEG
25. Oncul, N., **Saneiyani, S.**, & Slater, L. D., (2022). Non-Equilibrium Effect of Spectral Induced Polarization in Electrically Conductive Minerals: Pyrite versus Pyrrhotite models, In *AGU Fall Meeting 2022*. AGU
24. Peshtani, K., Weller, A., **Saneiyani, S.**, & Slater, L. (2022). The influence of magnetic minerals on induced polarization measurements in sedimentary rocks. In *AGU Fall Meeting 2022*. AGU
23. Perez, V. R., Jackson, L. E., Dee, K. T., & **Saneiyani, S.**, (2022). Evaluation of Saltwater Intrusion using Electrical Resistivity and Geochemical Measurements in Brazoria County, Texas, In *AGU Fall Meeting 2022*. AGU
22. McKnight, J., & **Saneiyani, S.**, (2022). Clay Volume Estimation Using Electrical Resistivity Tomography Utilizing ResIPy, In *AGU Fall Meeting 2022*. AGU
21. **Saneiyani, S.**, Siegenthaler, E., Gimenez, D., & Slater, L., (2022). Accuracy of Archie's law for clayey soils with high swelling capacity, *SEG Technical Program Expanded Abstracts*: 3133-3137.
20. Ntalagiannis, D., Mwakanyamale, K., **Saneiyani, S.**, Phillips, A. C., & Barklage, M. (2022). Processing and interpretation of waterborne electrical resistivity imaging (ERI). In *34th Symposium on the Application of Geophysics to Engineering and Environmental Problems*, SAGEEP 2022 (pp. 79)
19. Slater, L. D., **Saneiyani, S.**, Garcia, A., & Peshtani, K., (2021, December). Engineering applications of induced polarization. *SEG Global Meeting Abstracts*: 52-55.
18. **Saneiyani, S.**, & Slater, L. (2021, September). Complex conductivity porosimetry during unconfined soil compression. In *First International Meeting for Applied Geoscience & Energy* (pp. 1971-1975). Society of Exploration Geophysicists.
17. Blanchy, G., **Saneiyani, S.**, Boyd, J., McLachlan, P., Binley, A., & Blanchy, G. (2021, April). ResIPy: an Intuitive Open Source Software for Complex Geoelectrical Inversion/Modeling. In *Engineering and Mining Geophysics 2021* (Vol. 2021, No. 1, pp. 1-2). European Association of Geoscientists & Engineers.
16. **Saneiyani, S.**, D. Ntalagiannis, N. Filippone, & F.S. Colwell, (2021). Geophysical monitoring of microbial movement. In *Symposium on the Application of Geophysics to Engineering and Environmental Problems Proceedings*: 97-97.
15. **Saneiyani, S.**, & Slater, L. D. (2020, December). Complex conductivity monitoring of uniaxial shear failure in soils. In *AGU Fall Meeting 2020*. AGU
14. Siegenthaler, E., **Saneiyani, S.**, & Slater, L. D. (2020, December). Petrophysical Characterization of Swelling and Non-Swelling Clays by Geoelectrical Measurements. In *AGU Fall Meeting 2020*. AGU.
13. Lee, J., Burns, S., Colwell, F., Ntalagiannis, D., Ohan, J., & **Saneiyani, S.** (2020, February). Dissolution and Recrystallization of Iron Oxide during MICP. In *Geo-Congress 2020: Biogeotechnics* (pp. 179-187). Reston, VA: American Society of Civil Engineers.

12. **Saneiyani, S.**, Ntarlagiannis, D., Filippone, N.V., & Colwell, F.S., (2019), Geophysical monitoring of microbial transport in saturated media, *American Geophysical Union annual fall meeting*, Dec 9-14, San Francisco, CA, USA.
11. Blanchy, G., Boyd, J., **Saneiyani, S.**, & Binley, A., (2019), pyR2, an easy to use graphical user interface and python API for hydrogeophysical DC/IP applications, *Geophysical Research Abstracts*, Vol 1.
10. **Saneiyani, S.**, Ohan, J., Lee, J., Ntarlagiannis, D., Colwell, F., Burns, S., (2019), “Spectral Induced Polarization as a Monitoring Tool for Bio-Mediated Soil Stabilization Processes”, *SAGEEP*, March 17-21, Portland, OR, USA
9. Ntarlagiannis, D., Mwakanyamale, K.E., **Saneiyani, S.**, (2019), Waterborne electrical resistivity imaging (ERI) for assessing lake sediment thickness, *SAGEEP*, March 17-21, Portland, OR, USA
8. **Saneiyani, S.**, Blanchy, G., Boyd, J., Binley, A., (2018), “pyR2: an open-source standalone graphical user interface for inversion of electrical resistivity and induced polarization measurements”, *American Geophysical Union annual fall meeting*, Dec 10-14, Washington, D.C., USA
7. **Saneiyani, S.**, Ohan, J., Lee, J., Colwell, F., Burns, S., & Ntarlagiannis, D., (2018), “Geophysical monitoring of microbial induced carbonate precipitation (MICP) at the Integrated Field Research Challenge (IFRC) site, at Rifle, CO”, *SAGEEP*, March 25-29, Nashville, TN, USA
6. **Saneiyani, S.**, Robinson, J., Slater, L., Brantley, S., Mount, G., & Forsythe, B., (2018), “Understanding flow transport in the Critical Zone using 3D electrical resistivity imaging”, *SAGEEP*, March 25-29, Nashville, TN, USA
5. **Saneiyani, S.**, Ntarlagiannis, D., & Werkema, (2017), Induced polarization for characterizing and monitoring soil stabilization processes, *American Geophysical Union annual fall meeting*, Dec 11-15, New Orleans, LA, USA.
4. Ntarlagiannis, D., Kalderis, D., Soupios, P., Kirmizakis, P., Gerodimou, K., **Saneiyani, S.**, & Vafidis, A., (2017), Biochar as a remediation agent-the role of geophysical methods for characterization and monitoring, *International Conference on Engineering Geophysics*, Oct 9-12, Al Ain, UAE.
3. Ohan, J., **Saneiyani, S.**, Lee, J., Ntarlagiannis, D., Burns, S., Colwell, F., (2017), Microbial Community Structure of an Alluvial Aquifer Treated to Encourage Microbial Induced Calcite Precipitation, *American Geophysical Union annual fall meeting*, Dec 11-15, New Orleans, LA, USA.
2. **Saneiyani, S.**, Ntarlagiannis, D., Werkema, Colwell, F.S., Ohan, J., (2016), Long Term Monitoring of Microbial Induced Soil Strengthening Processes, *American Geophysical Union annual fall meeting*, Dec 12-16, San Francisco, CA, USA.
1. **Saneiyani, S.**, Ntarlagiannis, D., Werkema, D., (2015), “Geophysical Monitoring of Soil Stabilization Processes”, *American Geophysical Union annual fall meeting*, Dec 14-18, San Francisco, CA, USA.

Teaching

Binghamton University

Environmental Geophysics (GEOL 453/553 – 3 CH)	2024 – present
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University of Oklahoma

Colorado Field Geophysics (GPHY 4133 – 3 CH; 3-week summer field camp)	2023 – 2024
Topics in Geosciences (GEOL 5001 – 3 CH) – Co taught	2023 – 2024
Electrical Environmental Geophysics (GPHY 5970 - 3 CH)	2022 – 2024
Frontiers of Geophysics (GPHY 2013 - 3 CH)	2022 – 2024
Near-Surface Geophysics (GPHY 4970 & 5970 – 3 CH)	2022 – 2024
Physical Geology (GEOL 1114 - 4 CH)	2021 – 2024
Near-Surface Geophysics Seminar (GPHY 5990 – 1 CH)	2021 – 2024
Special Topics in Geochemistry (GEOL 6970 – 1 CH) – Co taught	2021 – 2024

Rutgers University - Newark

Planet Earth lab instructor (21:460:104 - 1 CH)	2017 – 2019
Environmental Geology lab instructor (21:460:207 - 1 CH)	2018 – 2019
Hydrogeology (21:460:428 – 3 CH – TA for Lee Slater)	2016

Advising and Mentoring

Binghamton University:

M.Sc. committee (1 student):
Cailin Stauffer (Chair)

2024 – present

University of Oklahoma:

Ph.D. committee (4 students):

Dominic Candela

2023 – present

Danial Mansourian

2022 – present

Segun Bodunde

2022 – present

Bobby Buist

2021 – 2023

M.Sc. committee (3 students):

Dani Storms

2023 – 2024

John McKnight (Chair)

2022 – 2024

Vanessa Rios Perez

2021 – 2023

Undergraduate students (2 students):

Christian Davila

2023

Kylie Sexton

2023

Visiting students (1 student):

Leticia Presa Madrigal (Ph.D. Candidate at Universidad Politécnica de Madrid)

2023

Rutgers University – Newark:

Ph.D. committee (4 students):

Tahereh Moghtaderi

2024 – present

Nuray Oncul

2021 – present

Kaludio Peshtani

2021 – 2024

Joshua Thomson

2020 – present

Garden State - Louis Stokes Alliance for Minority Participation (LSAMP) (4 students)

2019 – 2020

Research Experience for Undergraduates (REU) (4 students)

2016 – 2018

Undergraduate Summer Research (2 students)

2017

Graduate Student visiting from UK (Panagiotis Kirmizakis)

2016

Service and Outreach

Organization committees:

SEG Hydrogeophysics committee chair

2023 – present

IMAGE conference organizing committee

2023 – 2024

Associate editor:

The Leading Edge (special edition: orphaned and abandoned wells) – Guest Editor

2023

Geophysics (publication lead for Near Surface Geophysics)

2022 – present

FastTIMES newsmagazine for the near-surface geophysical sciences

2019 – present

Convener:

SAGEEP:

SAGEEP 1: Geohazards

2024

AGU Fall meeting:

NS007: Characterization and monitoring of natural hazards using near-surface geophysics 2021 – 2023

NS006: A new landscape for induced polarization applications

2023

H037: Characterizing the environmental impacts of active and abandoned oil and gas wells,

2023

locating undocumented wells, and prioritizing abandonment

NS013: Near-Surface Geophysics General Contributions

2018 – 2020

IMAGE:

SS 4: Career-Advancing Near-Surface Geophysics: From Rock Core to Watershed Scales	2022
SS 15: Detecting and Characterizing Orphaned Oil and Gas Wells	2023
SS 20: Open-Source Software for Geospatial Data Manipulation	2023

Workshops organizer:**SAGEEP:**

Short Course: Electrical Resistivity Imaging for Waterborne Applications (w/ D. Ntarlagiannis)	2024
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IMAGE:

Orphaned Wells: A New Opportunity for an Old Problem (W-11)	2023
Shale Hills Critical Zone Observatory – SEG funded (PI: S. Saneiyani)	
Hydrogeophysics Workshop: hands-on experiences for geoscience students (2-day)	2017 and 2018
in collaboration with Penn State, Indiana University of Pennsylvania, and Dickinson College	

University of Oklahoma committees:

Mewbourne College of Earth and Energy (MCEE)	2021 – 2024
Diversity, Equity, and Inclusion (DEI) council	
School of Geosciences	
Award Committee	2023 – 2024
Strategic Faculty Hire in Hydrogeosciences Search Committee	2023 – 2024
Undergraduate studies committee	2021 – 2024
Computer laboratory committee	2021 – 2024

Reviewer (peer-reviewed journals):

Hydrogeology, Geophysical Research Letters, JGR Biogeosciences, Journal of Applied Geophysics, Journal of Cleaner Production, Environmental Monitoring and Assessment, Construction and Building Materials, Geotechnical and Geological Engineering, Groundwater, Geophysics, Environmental Earth Sciences, Near Surface Geophysics, Journal of Environmental and Engineering Geophysics, Acta Geophysica, Acta Geotechnica, Scientific Reports, Computer Modeling in Engineering & Sciences

Reviewer (grants):

National Science Foundation (NSF, U.S.A.)	2024
U.S. Army Corps of Engineers, Engineer Research and Development Center's (ERDC)	2023
Natural Sciences and Engineering Research Council of Canada (NSERC)	2023

Poster Judge:

American Geophysical Union – Fall Meeting	2021 – present
Garden State – LSAMP – 11 th annual STEM Research conference	2019

Rutgers Geophysical Society student chapter president:

Society of Exploration Geophysics (SEG)	2016 – 2019
Environmental and Engineering Geophysical Society (EEGS)	2016 – 2019

Memberships

American Geophysical Union (AGU) member, Environmental and Engineering Geophysical Society (EEGS), Society of Exploration Geophysics (SEG), University of Oklahoma's Data Institute for Societal Challenges (DISC).