

NADEESHA HEMALI KORALEGEDARA, PhD

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EDUCATION

Ph.D. Environmental Engineering (2012-2016)

University of Cincinnati, Cincinnati, Ohio, USA

Dissertation: *Evaluating the Constituent Leaching from Flue Gas Desulfurization Gypsum (FGDG) under Different Leaching Conditions, its Geochemical Interactions with Main Soil Constituents and Identifying Potential Beneficial Applications*

Advisor: Prof. Dionysios D. Dionysiou

M.Sc. Geology (2009-2011)

University of Cincinnati, Cincinnati, Ohio, USA

Thesis: *Chemical, Mineralogical and Textural Properties of the Kope Formation Mudstones: How They Affect its Durability*

Advisor: Prof. J. Barry Maynard

BSc. Special Degree in Geology (Honors, First Class) (2003-2007)

Minor in Chemistry, Biology

University of Peradeniya, Sri Lanka

Thesis: *Biogeochemistry of Horton Plains National Park: An implication for forest die back.*

Advisors: Prof. C.B. Dissanayake, Prof. Rohana Chandrajith

WORK EXPERIENCE

Senior Lecturer

University of Peradeniya, Sri Lanka

12/2017- Present

Environmental Engineer

Pegasus Technical Services (on-site contractor to US EPA, Cincinnati, OH, USA)

8/2016-12/2017

Graduate Research Assistant

Department of chemical and environmental engineering, University of Cincinnati, USA

8/2012-8/2016

Graduate Research Assistant

Department of Geology, University of Cincinnati, USA

9/2009-6/2011

Assistant Lecturer

University of Peradeniya, Sri Lanka

7/2007-6-2008

RESEARCH EXPERIENCE

United States Environmental Protection Agency Environmental Engineer

8/2016-12/2017

- Heavy metal distribution analysis in river sediments and water near mining sites

University of Cincinnati, USA Graduate Research Assistant

8/2012-8/2016

- Studied metal leaching characteristics of flue gas desulfurization gypsum (FGDG) used as a soil amendment in Agricultural purposes
- Studied the geochemical interactions of FGDG in Pb contaminated soils – long-term mineralogical changes and interactions between humic acid and ferrihydrite
- Studied the feasibility of FGDG in removing Pb contaminated water and the underlying mechanisms

University of Cincinnati, USA Graduate Research Assistant

9/2008-6/2011

- Studied the causes for slope instability in Cincinnati, OH area - geochemical, physical, textural and mineralogical characteristics of Kope Formation rocks and soils were analyzed
- Analyzed the chemistry and textural properties of clay minerals

University of Peradeniya, Sri Lanka Undergraduate Researcher

2006-2007

- Studied the causes for forest die back problem in Horton plains national park, Sri Lanka – Soil and plant materials of three tree species were analyzed

SKILLS AND QUALIFICATIONS

- Highly experienced in soil chemistry, mineralogy, heavy metal interactions with soil components
- Highly experienced in EPA approved metal leaching protocols
- Proficient in material characterization techniques; XRD, XAS, XRF, FT-IR, HPLC, SEM
- Proficient in sample analysis techniques; ICP-AES, AAS, IC, TOC, Hg-analyzer
- Creative problem solving, fast learning, and strategic planning abilities evidenced by meeting multiple independent/collaborative project goals within the research career.
- Strong oral and written communication skills demonstrated with several conference presentations and publications.
- Proficient with relevant softwares and scientific databases (Athena, X'Pert high score plus, Visual MINTEQ, MS office, Scopus, EndNote)

AWARDS AND RECOGNITION

- Certificate of merit award for outstanding oral presentation titled “Leachability of metals from FGD gypsum used in agricultural purpose” – awarded by the American chemical society, division of environmental chemistry. Received March 16 -20, 2014.
- Presidential award for scientific publications – awarded by National Research Council (NRC) of Sri Lanka. Received January 17, 2014.
- University award for academic excellence – University of Peradeniya, Sri Lanka, received 2008.
- P.W. Vitanage memorial scholarship for academic excellence - awarded by Geological Society of Sri Lanka (GSSL), received 2007.

RESEARCH GRANTS

- Accelerating higher education expansion and development (AHEAD) – Development oriented Research grant – 2019 - Ministry of city planning, water supply and higher education (Grant Coordinator)
Project – Utilization of natural red earth in northwestern coastal belt of Sri Lanka as an economic deposit.
Amount – LKR 40,000, 000.00
- NSF-NSFC- International Collaborative Research Grant – 2019 –National Science Foundation (Co-Investigator)
Project- Assessment of aquifer quality in relation with chronic kidney disease with unknown etiology in dry zone of Sri Lanka through an integrated approach using isotopes and water chemistry
Amount- LKR 30,000,000.00
- University Research Grant – 2018 – University of Peradeniya (Principle Investigator)
Project – Utilization of construction & demolition waste to decontaminate landfill leachates
Amount – LKR 498,000.00

SCIENTIFIC PUBLICATIONS

A. REFEREED JOURNAL ARTICLES (Peer Reviewed)

Published and In Press, Available On-Line

1. **Nadeesha H. Koralegedara**, Patricio X. Pinto, Souhail R. Al-Abed, Dionysios D. Dionysiou. Recent advances in flue gas desulfurization gypsum processes and applications -A review. ***Journal of Environmental Management***. 2019 (251), 109572.

2. **Nadeesha H. Koralegedara**, J. Barry Maynard. Chemical, Mineralogical and Textural Properties of the Kope Formation Mudstones: How They Affect its Durability. *Journal of Engineering Geology*. 2017 (228), 312-322.
3. Keith W. Little, **Nadeesha H. Koralegedara**, Souhail R. Al-Abed, Coleen M. Norheim. Decision support for environmental management of industrial residual Materials: New analytical methods combined with simulation and optimization modeling. *Journal of Environmental Managment*. 2017 (196), 137-147.
4. **Nadeesha H. Koralegedara**, Souhail R. Al-Abed, Sanjeewa K. Rodrigo, Ranju R. Karna, Kirk G. Scheckel, Dionysios D. Dionysiou, Alterations of lead speciation by sulfate from addition of flue gas desulfurization gypsum (FGDG) in two contaminated soils. *Science of the Total Environment*. 2017 (575), 1522-1529.
5. **N. H. Koralegedara**, S. R. Al-Abed, M. K. J. Arambewela, and D. D. Dionysiou. Impact of leaching conditions on constituents release from Flue Gas Desulfurization Gypsum (FGDG) and FGDG-soil mixture. *Journal of Hazardous Materials*. 2017 (324), 83-93.
6. Rohana Chandrajith, **Nadeesha H. Koralegedara**, K.B. Ranawana, H.J. Tobschall and C.B. Dissanayake. Major and trace elements in plants and soils in Horton Plains National Park, Sri Lanka: an approach to explain forest die back. *Environmental Geology*. 2008 (57), 17- 28 .

B. CONFERENCE PROCEEDINGS

1. Perera D.A. S., **Koralegedara N.H.** “Accumulation of elements in Ipomea aquatica and Amaranthus spinosus growing at municipal solid waste dumping site, Gohagoda, Kandy, Sri Lanka” 35th Annual Technical Sessions of Geological Society of Sri Lanka, Oak Ray Hotel, Kandy, Sri Lanka, February 22nd, 2019 **(Oral)**
2. **Koralegedara N.H.***, Al-Abed S., Dionysiou, D.D. “Use of Flue Gas Desulfurization (FGD) gypsum as an in-situ heavy metal stabilizer in contaminated soil” 249th American chemical society (ACS) National Meeting, Denver, CO, March 22-26, 2015. **(Poster)**
3. **Koralegedara N.H.***, Al-Abed S., Dionysiou, D.D. “Use of Flue Gas Desulfurization (FGD) gypsum as an *in-situ* heavy metal stabilizer in contaminated soil” Graduate Student Poster Forum, University of Cincinnati, March 06, 2015. **(Poster)**
4. **Koralegedara N.H.***, Al-Abed S., Dionysiou, D.D. “Metal leachability from FGD gypsum used in Agricultural purpose” 247th American chemical society (ACS) National Meeting, Dallas, TX, March 16-20, 2014. **(Oral)**
5. Fenlon K.A.*, **Koralegedara N.H.**, Al-Abed S., “Beneficial reuse of coal combustion products: Environmental benefits and determining risk” 245th American chemical society (ACS) National Meeting, New Orleans, LA, April 7 -11, 2013. **(Oral)**
6. Changseok Han*, **Koralegedara N.H.**, Mallikarjuna N. Nadagouda, Miguel Pelaez, Polycarpus Falaras, and Dionysios D. Dionysiou, “Photocatalytic films with Monodisperse TiO₂ Nanoparticles for Treatment of Microcystin-YR”, 17th International Conference on Semiconductor Photocatalysis and Solar Energy Conversion (SPASEC-17), Jacksonville, Florida, November 11-15, 2012. **(Poster)**

7. H. Barndöck, M. Pelaez, C. Han*, **Koralegedara N.H.**, W. Platten III, P. Campo-Moreno, D. Hermosilla, A. Blanco, D.D. Dionysiou, "Enhancement of Photocatalytic Activity of TiO₂ films Containing Size Controlled Monodisperse TiO₂ particles for Environment Remediation", 17th International Conference on Semiconductor Photocatalysis and Solar Energy Conversion (SPASEC-17), Jacksonville, Florida, November 11-15, 2012. **(Oral)**
8. Changseok Han*, **Koralegedara N.H.**, Miguel Pelaez, Rafael Luque, Patrick S.M. Dunlop, J. Anthony Byrne, Kevin O'Shea, Dionysios D Dionysiou. "Photocatalytic degradation of microcystin-YR using size-controlled monodisperse TiO₂ films" 244th American chemical society (ACS) National Meeting, Philadelphia, PA, August 19-23, 2012. **(Oral)**
9. Changseok Han*, **Koralegedara N. H.**, Miguel Pelaez, Rafael Luque, Patrick S.M. Dunlop, J. Anthony Byrne, Kevin O'Shea and Dionysios D. Dionysiou. "Degradation of Microcystin-YR using Photocatalytic Films Composed of Size-Controlled Monodisperse TiO₂ Nanoparticles". European Meeting on Solar Chemistry and Photocatalysis-Environmental Applications/spea7, Oporto, Portugal, June 17-20, 2012. **(Poster)**
10. **Koralegedara N.H.***; Maynard B.J.; "Chemical, Mineralogical and Textural changes of Kope Formation shale." 243rd GSA National Meeting, Minneapolis, MN, September 25-29, 2011. **(Poster)**
11. **Koralegedara N.H.***; Maynard B.J.; "Chemical, Mineralogical and Textural changes of Kope Formation shale." Graduate Student Poster Forum, University of Cincinnati, March 05, 2011. **(Poster)**

PROFESSIONAL AFFILIATIONS

1. American Chemical Society (ACS)
Member since 2012
2. Geological Society of America (GSA)
Member since 2009
3. American Geo-physical Union (AGU)
Member since 2009
4. Geological Society of Sri Lanka (GSSL)
Member since 2003

PROFESSIONAL SERVICE

Co-Editor – *Journal of Geological Society of Sri Lanka (JGSSL)* – 2018 -2020

Secretary – *Environmental Science Program – Faculty of Science- University of Peradeniya*

Coordinator – Accelerating higher education expansion and development (AHEAD) – Development oriented Research grant

Reviewer

Peer-Reviewed Journals (International)

- *Journal of Hazardous Materials* (Elsevier)
- *Journal of cleaner production* (Elsevier)

LAST REVISION DATE: December 10, 2017