

Natalie Alyssa Singer Kruse

Personal

Date of birth: 10 May, 1984
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Employment History

- 2009 – present Assistant Professor, Environmental Studies, Voinovich School of Leadership and Public Affairs, Ohio University
 - 2007 – 2009 Research Associate, Sir Joseph Swan Institute for Energy Research, HERO Group, Newcastle University, UK
 - 2005 – 2006 Teaching Assistant, School of Civil Engineering and Geosciences, Newcastle University, UK
 - 2003 Engineering Intern, Brown and Caldwell Environmental Engineers, Ohio
 - 2002 – 2004 Supplemental Instructor (Statics and Calculus), Ohio University
 - 2002 Ridgerunner, Appalachian Trail Conference
 - 2000 – 2001 Programmer, J Warren McClure School of Information and Telecommunications Technology, Ohio University
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Key Qualifications

- 2004 – 2007 PhD. School of Civil Engineering and Geosciences, Newcastle University, UK
 - 2001 – 2004 Magna Cum Laude B.S. in Civil Engineering (Minor: Geological Sciences), Ohio University
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Honors and Awards

- British Marshall Scholar (2004-2007)
 - Best Paper in *Mine Water and the Environment* (2009)
 - Royal Academy of Engineering / Engineering and Physical Sciences Research Council Early Career Fellowship (declined award) (2009)
 - Royal Academy of Engineering International Travel Grant (2006, 2007)
 - Registered Engineer-in-Training; Maryland Registration Number: 30407 (2004)
 - National Science Foundation Graduate Fellowship Honorable Mention (2004)
 - Barry M. Goldwater Scholarship (2003-2004)
 - Morris K. Udall Scholarship (2003-2004)
 - Drs. Cruse and Virginia Patton Moss Manassah Cutler Scholar (2001-2004)
 - National Merit Scholar (2001-2004)
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Grants

AEP Biological Recoverability, American Electric Power, January 2010 – December 2011, with Appalachian Watershed Research Group at Ohio University, \$150,000

Piketon Gaseous Diffusion Plant Energy and the Environment Projects, Department of Energy, October 2010 – September 2012, with Voinovich School Faculty and Staff at Ohio University, approximately \$500,000/year.

Hydraulic and Chemical Performance of Steel Slag Leach Beds in Ohio, Ohio University Research Committee, December 2009 – December 2010, \$8000

Research Challenge Grant, Ohio University Research Office, September 2009 – September 2010, \$5000

Engaging Energy Related Businesses with Newcastle University, Economic and Social Research Council, United Kingdom, January 2009, £2000

Research background and relevant experience

2009 – present: “*Hydraulic and Chemical Performance of Steel Slag Leach Beds in Ohio*” funded by Ohio University Research Committee

2009 – present: “*Impacts of the Nelsonville Bypass on Previously Mined Lands*” funded by startup funds (Voinovich School and OU VP for Research)

2008 – 2009: “*RE-Impact: Forestry-Based Bioenergy for Sustainable Development*” funded by EuropeAID

2008 – 2009: “*Modelling the Fate of Antibiotic Resistant Genes in the Alameda River, Cuba*” funded by Marie Curie Excellence Fund and the US EPA

2008 – 2009: “*The Interaction of Groundwater with an Erupting volcano (TIGER)*” in partnership with BGS

2008: “*Geothermal Mapping*” funded by Easington District, Durham County Council

2007 – 2008: “*Growing the capacity and capability to engage with the workforce development agenda at Newcastle University*” funded by One North East (Regional Development Agency)

2008: “*Coal Mine Sites for Targeted Remediation Research (CoSTaR)*” funded by European Union

2004 – 2007: PhD. “*Simulation of Hydrogeochemical Processes in Abandoned Underground Mines*” funded by Marshall Aid Commemoration Commission British Marshall Scholarship.

2001 – 2004: Undergraduate Thesis in Geological Sciences. “*Selection of acid mine drainage remediation systems based on specific criteria*”

2003 – 2004: Undergraduate Thesis in Civil Engineering. “*Design of a Tanker Truck Washout Wastewater Treatment Facility*”

Consultancy / Industrial experience

Particulate Air Pollution and Epidemiology in Communities near Open Cast Coal Mines in India (2008-2009) Newcastle University, Client: Coal India

Determination of hydraulic residence times at Coal Authority mine water treatment systems and their relationship to iron removal. (2007) Newcastle University; Client: UK Coal Authority

Sanitary Sewer Overflow Elimination Project (2003) Brown and Caldwell Environmental Engineers; Client: City of Columbus Ohio

Construction of New Landfill Cell, Closure of Old Landfill Cell (2003) Brown and Caldwell Environmental Engineers; Client: Erie County Landfill

Teaching

- ES 469/569 Watershed Management, Spring 2010, Ohio University
- REFlex 8002 Geothermal Energy and Photovoltaics, Fall 2008, Newcastle University
- Guest Lectures: ES 658 Colloquium, Fall 2009, Ohio University

- Planned Workshops: Water Quality Workshops for Miami University, Spring 2010, Cuyahoga Soil and Water Conservation District, Early and Late Summer 2010.
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Student Supervision

Kimberly Brewster, Master of Science in Environmental Studies, Leadership Option—Raccoon Creek Partnership, Expected Graduation 2011, Ohio University.

Janene Giuseffi, Master of Science in Environmental Studies, Leadership Option—Raccoon Creek Partnership, Expected Graduation 2011, Ohio University.

James Laske, Master of Arts in International Development, Expected Graduation 2011, Ohio University.

Jacob Sisler, Master of Science in Environmental Studies, Leadership Option—Raccoon Creek Partnership, Expected Graduation 2010, Ohio University.

Jonathon Brauer, Master of Science in Environmental Studies, Leadership Option—Raccoon Creek Partnership, Expected Graduation 2010, Ohio University.

Nick Schell, Master of Science in Environmental Studies, Leadership Option—Ohio Department of Natural Resources, Department of Mineral Resources Management, Expected Graduation 2010, Ohio University.

Jasmina Bogdanovic Milutinovic, *Assessing the potential for use of geothermal energy at the "Termalna Riviera Ilidza" spa complex in Bosnia and Herzegovina (2009)*, REFlex Master Program, Newcastle University.

Sergey Hartman, *Use of ground source heat pumps for supplying heat and cooling to apartment blocks in Volgograd, southern Russia (2009)*, REFlex Master Program, Newcastle University.

Selected publications

N.A. Kruse, E. Gozzard and A.P. Jarvis, "Determination of Hydraulic Residence Times in Several UK Mine Water Treatment Systems and their Relationship to Iron Removal" *Mine Water and the Environment*. 28 (2), (2009) 115–123.

N.A. Kruse, P.L. Younger, "Development of kinetically-based models for simulation of hydrogeochemical processes coupled to channel flow processes in abandoned underground mines" *Applied Geochemistry*. 24, (2009) 1301–1311.

N.A. Kruse, P.L. Younger. "Sinks of iron and manganese in underground coal mine workings" *Environmental Geology*. 57 (8), (2009) 1893–1899.

Kruse, N. and P.L. Younger, "The Rise and Fall of the Coal Industry in the United Kingdom" *Reclamation Matters*, Issue 2, 2007.

Kruse, N and P.L. Younger, "Using a novel reactive transport model to determine flow distribution between major roadways in a partially flooded abandoned underground metal mine." *Peer Reviewed Proceedings of the 10th International Mine Water Association Congress*, Karlovy Vary, Czech Republic, June 2008.

Kruse, N.A., V. Kutija and P.L. Younger. "Computational methods for acid mine drainage management: simulation of hydrogeochemical processes in abandoned underground coal mines." *Peer Reviewed Proceedings of the 7th International Congress on Acid Rock Drainage*. St. Louis, Missouri, USA. March, 2006.

Kruse, N.A. and P.L. Younger. "Computational methods for acid mine drainage management: decision-making for post-closure decision making." *Peer Reviewed Proceedings of the 9th International Mine Water Association Congress*. Oviedo, Spain. September, 2005.

Kruse, N., E. Gozzard, and A.P. Jarvis. Determination of hydraulic residence times at Coal Authority mine water treatment systems and their relationship to iron removal. Report to the Coal Authority: CA Doc Ref 001373978. August 2007.

Abstracts for Conference Proceedings

Kruse, N.A. and P.L. Younger. *An estimate of longevity of pollution from the Richmond Mine at Iron Mountain, California*. Presented at GSA Meeting, Denver, CO, USA. October 2007.

Kruse, N.A. and P.L. Younger. *A longevity estimate of polluting drainage from the Richmond Mine at Iron Mountain, California*. Presented at the Geological Society of London Bicentennial Conference, London, UK. September, 2007.

Kruse, N.A. and P.L. Younger. *Simulation of hydrogeochemical processes in abandoned underground mines*. Presented at Ohio Department of Natural Resources Applied Research Conference, Athens, OH, USA. December 2006.

Kruse, N.A. *Specific criteria for the selection of Acid Mine Drainage remediation methods*. Proceeding of the 23rd National Association for Abandoned Mine Land Programs Annual Meeting. Athens, Ohio, USA. August, 2001.