

GEORGE NIKOLICH
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Education

University of Nevada Las Vegas, NV	Electrical Engineering	B.A.	2003
University of Nevada Las Vegas, NV	Electrical Engineering	M.S.	2006

Professional Interests

George Nikolich designs instrumentation used in environmental research. Mr. Nikolich has collaborated in designing several novel devices resulting in intellectual property rights, including a recently commercialized portable field wind tunnel (PI-SWERL). His educational background is in electrical engineering and electronics. His designs integrate sensing systems with logic to control different types of actuators, achieving the degrees of automation and accuracy required by the specific application. His skills include the ability to rapidly prototype and refine new control systems using the National Instruments software and hardware as well as printed circuit boards utilizing microcontroller technology. In his laboratory at DRI he develops, creates, populates and tests printed circuit boards for unique applications. Mr. Nikolich has extensive experience in designing analog front end circuitry to interface with sensors, and electronic drives to control DC and stepper motors. He has intricate knowledge of many communication protocols and can interface components such as microcontrollers, memory media cards, analog to digital converters, etc. This allows him to design low cost solutions best suited for a specific application in terms of reliability, power consumption, performance, size, and environmental footprint.

- Scientific instrumentation design and development
- Holds a patent on portable wind tunnel (PI-SWERL) used in Aeolian research
- Electronic design, PCB prototyping, microcontroller programming, and sensor interface
- Meteorological station design, field installation and testing
- Data acquisition and analysis, image processing, and database management

Research Interests

- Air Quality Instrumentation Development
- Electronics Design, Microprocessor Programming
- Meteorological Station Installation and Monitoring
- Data Analysis, Image Processing
- Renewable Energy Systems
- Concentrated Photovoltaics

Appointments

2008- Present	Desert Research Institute – Assistant Research Electrical Engineer
2004 – 2008	Desert Research Institute – Instrument Software and Hardware Technician
2003 – 2004	Desert Research Institute – Hourly Technical Assistant
1990 – 1999	Desert Research Institute – Student Intern

Publications

- Etyemezian, V. R., Nikolich, G., and Gillies, J. A., 2016: Alignment of utility scale solar facilities with prevailing winds: Implications for dust. *J. Wind Engineer. Indust. Aerodynamics*, Submitted 2/25/16.
- Kavouras, I. G., DuBois, D. W., Nikolich, G., Corral, A. Y., and Etyemezian, V. R., 2016: Particulate dust emission factors from unpaved roads in the U.S.-Mexico border semi-arid region. *J. Arid Environ.*, **124**, 189-192.
- Munkhtsetseg, E., Shinoda, M., Gillies, J. A., Kimura, R., King, J., and Nikolich, G., 2016: Relationships between soil moisture and dust emissions in a bare sandy soil of Mongolia. *Particuology*, Accepted.
- Engelbrecht, J. P., Kavouras, I. G., Shafer, D. S., Campbell, D. E., Campbell, S. A., McCurdy, G. D., Kohl, S. D., Nikolich, G., Sheetz, L. H., and Gertler, A. W., 2015: Chemical Variability of PM₁₀ and PM_{2.5} in Southwestern Rural Nevada, USA. *Water Air Soil Pollut.*, **226**(7):217, 1-13.
- Kavouras, I. G., DuBois, D. W., Nikolich, G., and Etyemezian, V. R., 2015: Monitoring, Source Identification and Health Risks of Air Toxics in Albuquerque, New Mexico, U.S.A. *Aerosol Air Qual. Res.*, **15**, 556-571.
- Zhu, D., Gillies, J. A., Etyemezian, V. R., Nikolich, G., and Shaw, W. J., 2015: Evaluation of the surface roughness effect on suspended particle deposition near unpaved roads. *Atmos. Environ.*, **122**, 541-551.
- Etyemezian, V. R., Gillies, J. A., Shinoda, M., Nikolich, G., King, J., and Bardis, A. R., 2014: Accounting for surface roughness on measurements conducted with PI-SWRL: Evaluation of a subjective visual approach and a photogrammetric technique. *Aeolian Res.*, **13**, 35-50.
- Vargas, V., Chalbot, M., O'Brien, R., Nikolich, G., DuBois, D. W., Etyemezian, V. R., Kavouras, I. G., 2014: The effect of anthropogenic volatile organic compound sources on ozone in Boise, Idaho. *Environ. Chem.*, **114**(4), 445-458
- Chalbot, M., Nikolich, G., Etyemezian, V. R., DuBois, D. W., King, J., Shafer, D. S., Gamboa da Costa, G., Hinton, J. F., and Kavouras, I. G., 2013: Soil humic-like organic compounds in prescribed fire emissions using nuclear magnetic resonance spectroscopy. *Environ. Poll.*, **181**, 167-171.
- Kavouras, I. G., DuBois, D. W., Etyemezian, V. R., and Nikolich, G., 2013: Spatiotemporal variability of ground-level ozone and influence of smoke in Treasure Valley, Idaho. *Atmos. Res.*, **124**, 44-52
- Kavouras, I. G., Nikolich, G., Etyemezian, V. R., DuBois, D. W., King, J., and Shafer, D. S., 2012: In situ observations of soil minerals and organic matter in the early phases of prescribed fires. *J. Geophys. Res.-Atmospheres*, **117** (D12313), Online.
- Engelbrecht, J.P., J.A. Gillies, V. Etyemezian H. Kuhns, S.E. Baker, D. Zhu, G. Nikolich, and S.D. Kohl, 2012: Controls on mineral dust emissions at four arid locations in the western USA. *Aeolian Res.*, **6**, 41-54.
- King, J., V. Etyemezian, M. Sweeney, B. J. Buck, and G. Nikolich, 2011: Dust emission variability at the Salton Sea, California, USA. *Aeolian Research*, **3**, 67-79.
- Gillies, J.A., V. Etyemezian, H. Kuhns, J.D. McAlpine, S. Uppapalli, G. Nikolich, and J. Engelbrecht, 2010: Dust emissions created by low-level rotary-winged aircraft flight over desert surfaces. *Atmos. Environ.*, **44**, 1043-1053.
- Kuhns, H., J. Gillies, V. Etyemezian, G. Nikolich, J. King, D. Zhu, S. Uppapalli, J. Engelbrecht, and S. Kohl, 2010: Effect of Soil Type and Momentum on Unpaved Road Particulate Matter Emissions from Wheeled and Tracked Vehicles. *Aerosol Sci. & Technol.*, **44**, 193-202.

- Kavouras, I.G., V. Etyemezian, G. Nikolich, M. Young, J. Gillies, and D. Shafer, 2009: A New Technique for Characterizing the Efficacy of Fugitive Dust Suppressants. *J. Air Waste Manage. Assoc.*, **59**(5), 603-612.
- Sweeney, M., V. Etyemezian, T. Macpherson, W. Nickling, J. Gillies, G. Nikolich, and E. McDonald, 2008: Calibration of PI-SWERL with dust emission measurements from a straight-line field wind tunnel. *J. Geophys. Res. – Earth Surface*, **113**(F1), F01012.
- Macpherson, T., W.G. Nickling, J.A. Gillies, and V. Etyemezian, 2008: Dust emissions from undisturbed and disturbed supply limited desert surfaces. *J. Geophys. Res. – Earth Surface*, **113**(F2), F02S04.
- Gillies, J.A., H. Kuhns, J.P. Engelbrecht, S. Uppapalli, V. Etyemezian, and G. Nikolich, 2007: Particulate emissions from US Department of Defense artillery backblast testing. *J. Air Waste Manage. Assoc.*, **57**(5), 551-560.

Patents

- Etyemezian, V. R., and G. Nikolich, 2015: Optical System and Method of Use. U.S. Patent Office, No. 9,171,984 B2, October 27, 2015.
- Kuhns, H.D., P.R. Edwards, G. Nikolich, G., M.W. Roberts, 2013: Utility Monitoring Systems and Methods of Use. U.S. Patent Office, No. 8,396,821 B2, March, 12, 2013.
- Kuhns H., P.R. Edwards, G. Nikolich, M.W. Roberts, 2011: Utility monitoring and disaggregation systems and methods of use. U.S. Patent Office, No. 7,885,917 B2, February 8, 2011.
- Etyemezian V., H. Kuhns, M. Pitchford, S. Ahonen, G. Nikolich, 2007: Wind shear inducing soil stability measuring device. U.S. Patent Office, No. 7,155,966 B1, January 2, 2007.

Conference presentations and posters

- Miller, J. J., Mizell, S. A., McCurdy, G. D., Nikolich, G., Etyemezian, V. R., and Chapman, J. B., 2015: Fate and Transport of Contaminants at Soils Sites – 15512. *Waste Management '15*, Phoenix, AZ, March 15-19, 2015.
- Etyemezian, V. R., Nikolich, G., Gillies, J. A., and Nickling, W. G., 2014: SANTRI: a new tool for field measurements of sand transport. *8th International Conference on Aeolian Research*, Lanzhou, China, July 21, 2014.
- Mejia, J. F., Etyemezian, V. R., Fenstermaker, L. F., Miller, J. J., and Nikolich, G., 2014: Climate Change Impacts at NASA ARMSTRONG (Dryden) flight research Center, NASA CASI/ROSES. *4th Annual Climate Adaptation Workshop*, Palmdale, CA, January 23, 2014.
- Etyemezian, V. R., Shillito, R., Miller, J. J., Shafer, D. S., Cablk, M. E., Campbell, S. A., Chief, K., Fenstermaker, L. F., Forsee, W. J., Meyer, W. J., Mizell, S. A., and Nikolich, G., 2013: Post-fire erosion at a Pinyon-Juniper and a Blackbrush Community: 3+ Years of Data. *Great Basin Consortium 2nd Annual Conference*, Boise, ID, January 14-16, 2013.
- Shafer, D. S., Etyemezian, V. R., Chief, K., DuBois, D. W., Kavouras, I. G., King, J., Miller, J. J., Nikolich, G., and Zitzer, S. F., 2011: Ecological and physical response and feedbacks to fires in western North American deserts. *10th International Conference on Dry Lands Development*, Cairo, Egypt, December 12-15, 2010.
- Shafer, D. S., Miller, J. J., DuBois, D. W., Etyemezian, V., Kavouras, I. G., Nikolich, G., and Zitzer, S. F., 2009: Measuring potential fluvial and aeolian erosion from a rangeland fire in the Mojave-Great Basin transition zone. *2009 Portland GSA Annual Meeting*, Portland, OR, October 18-21, 2009.

- Shafer, D. S., DuBois, D.W., Etyemezian, V. R., Kavouras, I. G., Miller, J. J., Nikolich, G., and Stone, M. C., 2007: Fire as a Long-Term Stewardship Issue for Soils Contaminated with Radionuclides in the Western U.S. Proceedings, *11th International Conference on Environmental Remediation and Radioactive Waste Management*, Bruges, Belgium, September 2-6, 2007.
- Young, M. H., Caldwell, T. G., Meadows, D. G., Etyemezian, V. R., Nikolich, G., Shafer, D. S., McDonald, E. V., Miller, J. J., and Goreham, J., 2006: Hydrologic and Air Quality Impacts of a Soil-Applied, Organic Emulsion. Philadelphia, PA.
- Young, M. H., Caldwell, T. G., Meadows, D. G., Etyemezian, V. R., Nikolich, G., Shafer, D. S., McDonald, E. V., Miller, J. J., and Goreham, J., 2006: Field and Laboratory Evaluation of a Soil-Applied, Organic Emulsion. Indianapolis, IN.
- Shafer, D. S., Etyemezian, V. R., Young, M. H., Caldwell, T. G., Nikolich, G., Meadows, D. G., Karr, L. A., Salmon, J., Jones, W., and Morrill, V. D., 2006: Evaluation of organic-based emulsions for stabilization of dryland soils in the southwestern United States, Beijing, China.

Collaborators

Scott Campbell (DRI), Davis Dubois (New Mexico State University), Johann Englebrecht (DRI), Vicken Etyemezian (DRI), John Gillies (DRI), Mark Green (DRI), Ilias Kavouras (University of Arkansas for Medical Sciences), Nicholas Lancaster (DRI), Eric McDonald (DRI), Julianne Miller (DRI), Steve Mizell (DRI), William Nickling (University of Guelph), Marc Pitchford (DRI), Richard Purcell (DRI), David Shafer (Department of Energy Office of Legacy Management).