

Dr. Antonio Nieto

Dr. Antonio Nieto, is an *Associate Professor-Thomas V. Falkie Faculty Fellow*, with the Energy and Mineral Engineering department at Penn State University. Prior to his current position, Dr. Nieto worked as an Assistant Professor at Virginia Tech, and worked in the mining industry as a mine foreman, superintendent, and mine manager in both underground and surface mines. His research focuses on Mining Operations and Information Technology. Dr. Nieto graduated from Guanajuato University, Mexico in 1990; He holds a Master of Sciences in Mining Engineering from Colorado School of Mines, a Master of Sciences in Geo-Spatial Characterization from Ecole Des Mines de Paris (Paris Tech) and a Ph.D. in Earth Systems at the Colorado School of Mines. Dr. Nieto is working on the optimization of mining production strategies, spatial characterization of mineral reserves, development of real-time sensorial systems in earth extractive operations, and innovative engineering technologies for deep sea extraction of methane hydrates. Dr. Nieto is a Qualified Professional (QP) by the Mining and Metallurgical Society of America with expertise in Mining and Ore Reserves. As QP, Dr. Nieto certifies mining operations and ore reserves of mining public traded companies.

Education

- 2002 Ph.D., Mining and Earth Systems Engineering, Colorado School of Mines, Colorado
- 1997 M.S., Mining Geostatistics, Ecole des Mines de Paris, Fontainebleau, France
- 1995 M.S., Mining Engineering, Colorado School of Mines, Golden, Colorado
- 1990 B.S., Mining Engineering, Guanajuato School of Mines, Guanajuato, Mexico

Research focus

- Mine Safety Technologies and Innovation
- Optimization of Mining Cutoff Grade Strategies
- GPS Proximity Warning Systems in Earth Moving Systems
- Real-time GIS Sensorial Analysis
- Mining and Environmental Geostatistical Characterization

Professional Appointments

- 2009-current Associate Professor of Mining Engineering Energy and Minerals Engineering Department, Penn State.
- 2008-2009 Senior mining consultant, Southern Copper
- 2002-2008 Assistant Professor, Mining and Minerals Engineering Department, Virginia Tech
- 1997-1999 Director, Economic analysis; geological modeling, reserves estimation, geostatistical analysis, ore modeling, and mine design. Northern Mining Co.
- 1991-1993 Mine Manager, La Rica Mine, application and development of underground mining methods. Real del Monte Mining Company
- 1990-1991 Mine Superintendent, Tayolita Mine, underground mining. GoldCorp Mining Company

Courses Taught

Dr. Nieto's teaching includes the following geo-resources and mining engineering courses:

- Geo-Resource Evaluation, Investment Decision Methods, and Financial Analysis,
- Sampling and Monitoring of the Geo-Environment
- MNG 401 - Introduction to Mining Operations
- Mine Systems Engineering

- Mineral Property Evaluation
- Engineering Evaluation of Oil and Gas Properties
- Elements of Mine Design
- Project Engineering and Mine Management
- Energy and Geo-Environmental Engineering
- Mineral Property Evaluation
- Engineering Evaluation of Oil and Gas Properties
- Introduction to Mining Engineering
- Computer Applications in Mining

Industry three days short-courses and faculty visits

- Reserve Estimation, Visiting Professor, University of Science and Technology, Beijing, China,(Oct-Nov. 2011)
- Semi-autonomous vehicles in Mining, Visiting Professor, Cagliari University, Italy, (May-July 2011)
- Design of cut-off grade policy and optimization, Univesidad Catolica del Peru, Lima, (Aug. 2010)
- Design of cut-off grade policy and optimization, Univesidad Catolica del Peru, Lima, (Oct. 2010)
- Reserves estimation in mining, Univesidad de Guanajuato, Mexico (2009)
- Open pit mining and mine evaluation, Mexico City, Mexico (2006)

Mining Conferences chaired and offered (last tow years)

- Prague, Check Republic 2010
- Trujillo, Peru, 2010
- Lima, Peru, 2010
- Phoenix, AZ, USA 2010
- Banff, Canada, 2009
- University of Science and Technology, Beijing, China,(2009)
- Denver, CO, USA. 2009

Peer-Reviewed Publications

- Nieto, A., (2011), "Key Deposit Indicators (KDI) and Key Mining Method Indicators (KMI) in Underground Mining Method Selection Criteria", SME Transactions, Vol. Jan. 2011
- Sun, E. A. Nieto, Z. Li, Kecojevic, V., (Dec. 2010), "An Integrated Information Technology Assisted Driving System to Improve Mine Trucks-Related Safety", Safety Science Journal, Elsevier.Vol.49, No.10, pp. 1490-1497
- Nieto, A., E. Sun, (2010), "Real Time Assisted Driving in Open Pit Mining Operations Using Google Earth" SME Mining Engineering. Feb 2010, Vol. 62 No.2, pp. 21-26
- Sun, E., A. Nieto, Z. Li, (2010) ,GPS and Google Earth based 3D assisted driving system for trucks in surface mines. Mining Science and Technology. Vol. 20, No. 1, pp. 138-142
- Nieto, A., S. Peng, (2010), "A Proximity Warning and Terrain Modeling System Based on Delaunay Triangulation and Surface Spline Interpolation" Mining Technology Journal. Vol. 119, No. 1, pp. 1-6

- M. Orsulak, Kecojovic, V., Grayson, L. A. Nieto, (2010), "Risk Assessment of Safety Violations for Coal Mines", *International Journal of Surface Mining, Reclamation & Environment*. Vol. 24, No. 3, pp.244-254
- Nieto, A., Duerksen, A.* (2008), "The Effects of Legislation on Mine Safety Technology and Advancement in the U.S.", *International Journal of Mining and Mineral Engineering*, Vol. 1, No. 1, pp. 95-103.
- Schaum, A.*, Nieto, A., Schafrik, S. and Karmis, M. (2008), "Haul Truck Safety and Virtual Environments Training", *Mining Engineering*, Vol. 60, No.8, pp. 56-60.
- Nieto, A., Robidoux, J.* (2007), "Potential Use of GIS-GPS Tele-Geo-Monitoring to Identify Sources of Vehicle Vibration Injuries", *Mining Engineering*, Vol. 59, No.3, pp. 56-63.
- Nieto, A., Bascetin. A. (2007), "Determination of Optimal Cutoff Grade Policy to Optimize NPV Using a New Approach with Optimization Factor", *The Journal of the Southern African Institute of Mining and Metallurgy*, Vol. 107, pp. 87-94.
- Volos, H.*, Nieto, A., Buehrer, M., Silva, S., (2007), Preliminary UWB Propagation Measurements in an Underground Limestone Mine, Global Telecommunications". *GLOBECOM '07. IEEE*, pp. 3770-3774, ISBN: 978-1-4244-1043-9.
- Nieto, A., Bascetin, A. (2006), "Mining Cutoff Grade Strategy to Optimize NPV Based on Multiyear GRG Iterative Factor", *Mining Technology Journal*, Vol. 15. No. 2. pp. 59-64.
- Nieto, A., Toffait, Y. (2006), "Tonnage-Grade Test of Nonlinear Estimators: Indicator Kriging, Disjunctive Kriging and Uniform Conditioning", *SME Transactions*, Vol. 320, pp. 45-57.
- Nieto, A., Dagdelen K. (2006), "Development of a Dump Edge and Vehicle Proximity Warning System Based on GPS and Wireless Networks to Improve Safety in Open Pit Mines", *SME Transactions*, Vol. 320, pp. 11-20.
- Nieto, A., Miller, S.* (2005), "A GPS Proximity Warning System with Transmission Lock for Large Mobile Equipment", *International Journal of Surface Mining, Reclamation & Environment*, Vol. XIX, No. 1, pp. 75-84.
- Nieto, A., Miller, S.* (2005), "In-Rest Vehicle Proximity Systems With Real-Time Transmission Lock", *APCOM 2005: 32nd International Symposium on Application of Computers and Operations Research in the Mineral Industries*, Tucson, AZ, pp. 405-411.
- Nieto, A., Dagdelen, K. (2003), "Accuracy Testing of a Vehicle Proximity Warning System Based on GPS and Wireless Networks" *International Journal of Surface Mining, Reclamation & Environment*, Vol. XVII, No. 3, pp. 156-170.
- Nieto, A., Dagdelen, K. (2003), "Development and Testing of a Vehicle Collision Avoidance System Based on GPS and Wireless Networks for Open-pit Mines", *APCOM 2003: 31st International Symposium on Application of Computers and Operations Research in the Mineral Industries*, Cape Town, SA, pp. 27-34.
- Dagdelen, K., Nieto, A. (2001), "Improving Safety of Off Highway Trucks Through GPS", *APCOM 2001: 29th International Symposium on Application of Computers and Operations Research in the Mineral Industries*, Beijing, CH, pp. 757-762.
- Dagdelen, K., Nieto, A. (1997), "Geostatistics Applied to Mine Waste Characterization at Leadville, CO. USA", *International Journal of Surface Mining, Reclamation & Environment*, Vol. XI, No. 4, pp. 175-188.

Papers Presented at Professional Meetings

- Nieto, A. E. Sun, (March 2010). Real-Time Assisted Driving in Open Pit Mining Operations Using Google Earth. Phoenix, AZ.
- Nieto, A., E. Sun. (Oct. 2009). "Real-time Google Earth 3D Assisted Driving System in Surface Mining Operations ". 2009 MPES, 18th International Symposium of Mine Planning/Equipment Selection. Banff, Canada.
- Bascetin, S. Tuylu, A. Nieto, 2009 " The Study of Relationships between Economical And Environmental Parameters For Sustainable Resources Management". 2009 MPES, 18th International Symposium of Mine Planning/Equipment Selection.
- Sun, E. A. Nieto, "Real-time Google Earth 3D Assisted Driving System in Surface Mining Operations". 2009 IEEE 10th International Conference on Computer-aided Industrial Design & Conceptual Design.
- Enji Sun, Antonio Nieto. 2009. Zigbee/Google Earth based assisted driving system in mining. The 6th International Conference on Mining Science and Technology. 19(5): 626-630
- Bascetin, A., Nieto, A. (2008), "Determination of Optimal Cutoff Grade Policy for a Copper Mine in Turkey", 17th International Symposium Mine Planning and Equipment Selection (MPES 2008), Oct. 20-22, 2008, Beijing, China, (In Press)
- Bascetin, A., Nieto, A. (2007), "Determination of a Mining Cutoff Grade Strategy Based on an Iterative Factor", 2007 SME Annual Meeting, Feb. 25-28, Salt Lake City, Utah, Preprint 07-088, 8 pp.
- Bascetin, A., Nieto, A. (2006), "A Mining cutoff grade optimization software to optimize NPV", 15th International Symposium Mine Planning and Equipment Selection (MPES 2006), Sept.20-22, 2006, Torino, Italy, pp.1083-1091
- Nieto, A., Robidoux, J.* (2005), "Real-Time Geographic Characterization of Vehicle Vibration Sources in Surface Mines", 14th International Symposium Mine Planning and Equipment Selection (MPES 2005) and 5th International Conference on Computer Applications in the Minerals Industry (CAMI 2005), Oct. 31-Nov. 3, 2005, Banff, Alberta, Canada
- Dessureault, S., Kecojevic, V., Nieto, A., and Ganguli, R., (2005), "Infrastructure for Integrated Data Environments and Analysis (IIDEA) for Mining and Processing Systems", 14th International Symposium Mine Planning and Equipment Selection. (MPES 2005), Oct. 31-Nov. 3, 2005, Banff, Canada
- Kleiner, B.M., Nieto, A., Nussbaum, M.A., Smith-Jackson, T., Songer, A., Wakefield, R. and Babski-Reeves, K. (2005), "Center for Innovation in Construction Safety and Health", Industrial Engineering Research Conference, May 16, 2005, Atlanta, Georgia
- Vazquez, C., Nieto, A. (2004), "A Statistical Means of Modeling Lignite Quality from E-Log and Lab Data", 2004 SME Annual Meeting, Feb. 23– 25, Denver, CO, Preprint 04-069, 4 pp.
- Nieto, A., Dagdelen, K. (2003), "Reliability Testing of a Vehicle Proximity Warning System Based on GPS and Wireless Networks", 12th International Symposium on Mine Planning & Equipment Selection (MPES 2003), April 23–25, Kalgoorlie, WA, Australia, pp. 273-281
- Nieto, A., Craig M.* (2003), "Utilization of Archived and Real-time Data based on GPS for the Improvement of Earthwork Productivity using 3D Dynamic Tools", XXV Mining Convention, Acapulco, Mexico.
- Nieto, A., Dagdelen, K. (2002), "Development of Dump Edge and Vehicle Proximity Warning System Using GPS and Wireless Network Communications to Improve Safety in Open Pit Mines", 2002 SME Annual Meeting, Feb. 25 - 27, Phoenix, Arizona, Preprint 02-124, 8 pp.

Competitive Grants

- "Transportation and Logistics Engineering Consortium for Development of NAFTA Trade Corridors", U.S. Department of Education.
- "GPS Applications for Reducing Jarring and Run-Over Injuries in Surface Mines", National Institute for Occupational Safety and Health (NIOSH)

- “Tele-Geo-Monitoring for Off-The-Road Performance Analysis”, Goodyear Tire and Rubber Company.
- “GPS/GIS Materials Handling Intelligent System in Mining Operations”, Department of Energy.
- "Virtual Environment (VE) Applications to Improve Mining Health And Safety Training", National Institute for Occupational Safety and Health (NIOSH)
- “Center for Innovation in Construction Safety and Health”, National Institute for Occupational Safety and Health
- “Noise and Vibration Control of Hammer Drills”. National Institute for Occupational Safety and Health

Books and Editorial Service

- SME Mining Engineering Handbook 3rd edition. Chapter 7: Soft Rock Underground Mining Methods, classification and selection.
- Board, International Journal of Mining and Mineral Engineering (IJMME)

Software Development

- Assisted Driving System in Mining (ADS)
- Virtual-Mine Systems in Mining and Construction Operation (VMS)

Service as an Officer of an Academic or Professional Association

- Qualified Profession (QP) and member of the Mining and Minerals Society of America
- Guanajuato School of Mines, Board of Visitors.
- SME Society of Mining and Metallurgist Engineers. Committee and Session Chair since 1996
- NIOSH/CDC Center for Innovation in Construction, Executive Team Member
- APCOM 06, 07, 09 (Application of Computers in the Minerals Industries) Organizing Committee

Reviewer and chair for the following institutions, journals, and agencies.

- The Society for Mining, Metallurgy, and Exploration (SME), transactions and proceedings
- Mining Engineering Magazine
- Mining Technology Journal
- International Journal of Surface Mining, Reclamation & Environment
- Application of Computers in the Minerals Industries (APCOM) proceedings
- Environmental Geology Journal
- Mathematical Modeling Journal
- National Science Foundation (NSF)

Recognition, Honors, and Awards

- Endowed as Thomas V. Falkie Mining Engineering Faculty Fellow by The Pennsylvania State University
- Commissioned by Mexico’s Foro Consultivo de Ciencia y Tecnologia, (advisory board to the president of Mexico) to assess the Pasta de Conchos coal mine accident, June 2007

- Recognized as Qualified Professional by the Mining and Metallurgical Society of America. QPs certify and or approve reports relevant to public release of ore reserves in the mining industry that may influence the investing behavior of the public or a company's shareholders, August 2008