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Geoscience R&D Activities in Sandia National Laboratories

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Erik K. Webb (Geoscience Group)
Moo Y. Lee (Geomechanics Department)



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Erik K. Webb

Dr. Erik K. Webb manages Sandia National Laboratories' Geoscience Research & Applications Group consisting of six departments implementing basic to applied research, implementing complex monitoring systems and for national security and energy development.

Erik has a PhD in hydrogeology with emphasis in applied mathematics from the University of Wisconsin, has worked on an array of earth science problems with commercial (UNOCAL) and US Government agencies (USGS, ORNL, DOE, NRC and the EPA).

Erik served a fellowship with the Japanese Atomic Energy Agency and helped co-author the year 2000 Report on High Level Waste to the Japanese Diet, oversaw hydrological research at Sandia National Laboratories, served two years as a Congressional Fellow on the Senate Energy Committee and three years on the personal staff of Senator Pete Domenici focusing on western water policy and energy issues.

Erik served as assistant to Sandia National Laboratories Chief of Staff, and as the SNL Government Relations manager for the nuclear weapons program through ratification of the third START treaty with Russia.

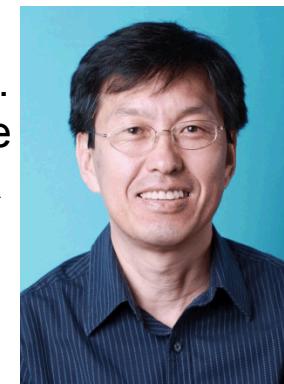


Moo Y. Lee

Dr. Moo Y. Lee is the manager of the Geomechanics Department, Sandia National Laboratories. He has over 30 years of experience in hydraulic fracturing in situ stress measurements and complex laboratory / numerical simulations of boreholes subjected to poly-axial stress conditions. He has been working on cross-cutting issues in geosciences and geoengineering related to basic energy sciences, nuclear waste disposal, geomaterial characterization, and underground storage of air/hydrocarbon.

He received the Applied Research Award from the US National Committee for Rock Mechanics in 1994 by conducting a laboratory simulation of the Borehole Breakouts in Underground Research Laboratory located in Canada. He also characterized and provided the crucial materials data for Columbia Investigation and received Lockheed Martin Nova award.

He received his B.S. degree in Mineral and Petroleum Engineering from the Seoul National University, Korea in 1980. After graduation, he came to the U.S. to begin his graduate studies at the University of Wisconsin-Madison, where he received his M.S. and Ph.D degrees in Mining Engineering specialized in Rock Mechanics and Statistics.



Energy & Climate PMU Program Areas



Renewable Systems & Energy Infrastructure

PAD: Carol Adkins
Deputy: Juan Torres

Renewable Energy
Juan Torres

Energy Efficiency
Art Pontau

Grid Modernization
Charles Hanley

Climate & Engineered Earth Systems

PAD: Peter Davies
Deputy: Amy Halloran

Climate Modeling & Measurement
Scott Collis

Energy & Water
Stephanie Kuzio

Fossil Energy Management
Erik Webb

Biofuels
Anup Singh

Back End of the Fuel Cycle
Tito Bonano

DOE Managed Nuclear Waste
Paul Shoemaker

Nuclear Energy & Fuel Cycle Programs

PAD: Susan Pickering
Deputy: Patrick Mattie

Commercial Nuclear Power Generation
Tito Bonano

Nuclear Energy Safety & Security
Richard Griffith

Transportation Energy & Systems

PAD: Bob Hwang
Deputy: Art Pontau

Vehicle Technologies
Paul Miles

Biomass Technology
Ben Wu

Fuel Cells/Hydrogen Technology
Chris San Marchi

Energy Research

PAD: Grant Heffelfinger
Deputy: Wahid Hermina

ARPA-E
Wahid Hermina

SC BES CHEMSCIENCE
Dave Chandler

SC ASCR
Scott Collis

SC BES CINT
Sean Hearne
(Acting)

SC BES GEO
Moo Lee

SC BES MATERIALS SCIENCES
Jeff Nelson

Geoscience R&D Activities in Sandia



(I)

- Digital Rock Physics for Experiments and Modeling of Fractured Porous Media
- Detection of Soluble Ligand-Tuned Molecular Tags for Subterranean Fluid Flow Monitoring Using Resonance Raman Spectroscopy
- Fundamental Study of Disposition and Release of Methane in Shale Gas Reservoirs
- Adaptive Self-Tuning of Seismic Sensors
- Underground Imaging with Muons

(II)

- Hydraulic Fracturing R&D at Sandia
- Water-free shale stimulation: Experimental Studies of Electrofracturing
- Shale Poromechanics: Heterogeneity, Flow, Failure, and Creep
- Real-Time Degassing of Rock during Deformation
- Methane Hydrate Formation on Clay Mineral Surfaces: Thermodynamic Stability and Heterogenous Nucleation Mechanisms