Joseph Shy-Yih Wang
Berkeley, California

PROFESSIONAL PREPARATION

National Taiwan University	Physics	B.S.	1967
University of Chicago	Physics	M.S.	1969
University of California, Berkeley	Physics	Ph.D.	1973

APPOINTMENTS

1977 – 2008	Staff Scientist / Physicist, Earth Sciences Div. (ESD), Lawrence Berkeley National Lab (LBNL)
1995 –	Group Leader and Point of Contact, Ambient Field Testing, ESD, LBNL
2001 – 2004	Department Manager, Unsaturated Zone, Bechtel SAIC Company
1977	Lecturer, Physics, University of California, Berkeley (UCB)
1973 – 1976	Institute Fellow, Physics, Battelle Memorial Institute, Columbus, OH
1969 – 1973	Teaching and Research Assistant, Physics, UCB
1968 – 1969	International House Fellow, University of Chicago
1967 – 1968	Electronics Officer, Air Force, Taiwan

SYNERGISTIC ACTIVITIES

1. *Energy, Environment, and Economy (EEE) Stimulations with Utility Saving Assistance (USA) Initiative*: From a 2009 visit to the Congress, develop interests beyond physics/geoscience to contribute to EEE by exploring green building, energy institute, and climate change issues. Engaging with governmental, private, academic, research, and industrial organizations. The USA idea can be extending from local, state, national, to global applications and generating approaches for all residents to engage in energy efficiency, alternative energy production, environment conservation, greenhouse gas reduction; and enjoy economic benefits in the long term. The USA simple concept is based on residents maintaining fixed utility payments for a finite period, like paying monthly mortgage, with private or public upfront investments for remodeling buildings, supplying efficient appliances, inducing technologic/economic revolutions, and generating green jobs.
2. *International, Inter-disciplinary Innovations (III) in Underground Research Laboratories (URLs)*: International collaboration developments currently include activities with the French Low Noise Underground Lab LSBB, serving on its scientific advisory committee and as co-organizer of the 2010 3rd i-DUST conference; with the International Society for Rock Mechanics, by organizing the 2011 ISRM workshop on international URLs, while interacting with nuclear waster repository, physics detector, and carbon sequestration investigators and developing inter-disciplinary approaches leading to innovations. Other committee, editing and E&O assignments include VZJ associate editor (2005-2007), geotechnical advisory committee of Deep Underground Science and Engineering Laboratory (2008 -), IRIS intern tour during Am. Geophysics Union meeting (2009), ARMA publication committee (2010 -).
3. *Seismic-Electromagnetic Coupling from Underground, Surface, to the Ionosphere*: Organized AGU natural-hazard focus group session for integrating measurements from geosphere through atmosphere to ionosphere and beyond (2009). Explore high signal to noise ratios with superconducting devices of gravimeters and SQUIDs for gravitational and magnetic measurements associated with the Transparent Earth activities at the DUSEL (2010).
4. *DUSEL and Other URLs*: Participated in the Deep Science Committee on technical evaluation of underground lab sites (2000-2001). Organized the Underground Science Workshop and meeting (2001-2002), the UCB spring lecture series on US DEEP underground labs by S-1 and eight S-2 candidate site PIs, and an AGU Townhall meeting on DUSEL (2005). Participated and contributed in NSF/DOE visits (2002-2004), NeSS, EarthLab, S-1 workshops (2003-2005), and Homestake workshops (2005-2009), served as director of engineering sciences before 2008. Interacted with researchers at both earth science and physics underground facilities worldwide, from transition of an abandoned iron mine to a laboratory at Stripa, Sweden (1970s), visits of the earth research lab at Grimsel Switzerland and the physics lab at Gran Sasso Italy (2004), visits for the neutrino lab at Daya Bay China (2006-2007), to presentations at the Low Noise Underground Lab LSBB France (2008), SINOROCK (2009), EUROROCK, ARMA (2010).
5. *Ambient Field Testing*: Formed and led the ambient testing group, served as a Yucca Mountain manager, interacted with Sandia/USGS and developed Unsaturated Zone conceptual modeling and field testing programs in the underground Exploratory Studies Facility (1990s-2000s). Managed and supervised the completion of 21

analysis and model reports on UZ flow, transport and coupled processes, as the technical basis for licensing models. Coordinated with Los Alamos/USGS to formulate field applications of the geological repository, in a Bechtel SAIC department with over 100 researchers from 4 national laboratories, 1 university, and 1 private company (2001-2004). Participated in SECUREarth initiative on energy and environment in workshop organization and white paper preparation.

RECENT PRESENTATIONS MOST CLOSELY RELATED TO THE PROPOSED PROJECT

1. *Seismic Correlation and Coupling from Underground, Surface, to the Ionosphere*. J.S.Y. Wang and G. Waysand, 2009. Am. Geophys. Union Fall Meeting, NH31c-1132.
2. *Interdisciplinary and International Deep Underground Science, Engineering and Technology Laboratories*, J.S.Y. Wang, Y. Guglielmi, S. Gaffet, and G. Waysand, 2009. Proc. ISRM-Sponsored Int. Symp. — Rock Characterization, Modeling, and Engineering Design Methods, SINOROCK2009, Paper 312, p. 213 in proc. and pp. 892-896 in CD.
3. *The Role of Sandlines between Levels in the DUSEL Study: Carbon in Hydrological Environment for Enhanced Retention and Sequestration*, .J.S.Y Wang, 2008, AGU Fall Mtg. H53A-1005.
4. *Earth Science Collaborations for Deep Underground Science and Engineering Laboratory***,** J.S.Y. Wang, 2007. In *Rock Mechanics: Meeting Society's Challenges and Demands*, E. Eberhardt, D. Stead, &T. Morrison (eds.) Proc. 1st Canada-U.S. Rock Mechanics Symp., May 27-31, Vancouver, vol. 2, 1105-1113.
5. *A Geoneutrino Experiment at Homestake*, N. Tolich, Y. -D. Chan, C. A. Currat, B. K. Fujikawa, R. Henning, K. T. Lesko, A. W. P. Poon, M. P. Decowski, J. Wang and K. Tolich, 2006. *Earth, Moon, and Planets*, 99, 229-240, DOI 10.1007/s11038-006-9112-8.

OTHER SELECTED PUBLICATIONS

1. *In Situ Field Testing of Processes*, Report for Yucca Mountain Project, rev. 2000, 01, 03, and 04. J.S.Y. Wang, www.osti.gov/energycitations/product.biblio.jsp?osti_id=837100
2. *Evolution of the Unsaturated Zone Testing at Yucca Mountain*, J.S.Y.,Wang and G.S. Bodvarsson, 2003. *Journal of Contaminant Hydrology*, *Special Issue 62-63*: 337-360.
3. *Field Tests and Model Analyses of Seepage into Drift*, J.S.Y. Wang, R.C. Trautz, P.J. Cook, S. Finsterle, A. James, and J. Birkholzer, 1999. *J. Contaminant Hydro., 38* (1-3), 323-347.
4. *Flow and Transport in Fractured Rocks*, J.S.Y. Wang, 1991. *Rev. Geophys., 29*(S), 254-262.
5. *Hydrologic Mechanisms Governing Fluid Flow in a Partially Saturated, Fractured Porous-Medium*, J.S.Y., Wang and T.N. Narasimhan, 1985. *Water Resour. Res, 21*(12) 1861-1874.

COLLABORATORS AND CO-EDITORS

Steven Glaser, Kevin Lesko, John Drucup, T.N. Narasimhan, UCB; Bill Roggenthen, SDSMT; Nikolai Tolich, U Washington; Stéphane Gaffet, Georges Waysand, LSBB; Yves Guglielmi, U. Provence; Chris Laughton, Fermi Lab; Paul Cook, Qualin Zhou, Rohit Salve, Hui Hai Liu, Tim Kneafsey, Liviu Tomutsa, Stefan Finsterle, Jens Birkholzer, Grace Su, Karsten Pruess, Paul Witherspoon, LBNL; Yvonne Tsang, Chin-Fu Tsang, Imperial College; David Hudson, USGS; Rob Trautz, EPRI; Max Hu, UTA; Jeff Roberts, LLNL; June Fabryka-Martin, LANL; Chris Scholz, Columbia; Rien van Genuchten, Federal U Rio de Janeiro, Bo Bodvarsson, Neville Cook.

GRADUATE ADVISOR**:** Charles Kittel, Physics, University of California Berkeley.

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