

Charles Fairhurst

Senior Consultant

Expertise

Rock Mechanics, Mining Engineering, Geological Isolation of Nuclear Waste

Education

Ph.D. (Mining Engineering), 1955
Sheffield University, Western Bank, Sheffield, England

B.Eng. (Mining Engineering, with First-Class Honors), 1952
Sheffield University, Western Bank, Sheffield, England

Professional Affiliations

Fellow: American Rock Mechanics Association (ARMA), American Underground Construction Association, International Society of Rock Mechanics (ISRM), Sigma XI, U.S. National Committee on Rock Mechanics.

Honors

Officier, Légion d'Honneur, France (2013)

Member: Board of Governors, Goe-Institute of the ASCE (1998 – 2001)

Science and Technology Review Panel, U.S. Department of Energy (1998 – 2001)

U.S. National Academy of Engineering (1991)

Royal Swedish Academy of Engineering Sciences (1979)

“Salzburg Circle,” predecessor to ISRM (1962 – 1966)

Corresponding Member: International Büro of Rock Mechanics, Berlin, Germany (1963 – 1970)

Chair: U.S. National Committee on Rock Mechanics (1972 – 1974)

President: ARMA (1995 – 1997)

ISRM (1991 – 1995)

American Underground Space Association (1976 – 1977)

Honorary Doctorates: University of Minnesota, United States (2000)

University of Sheffield, England (1997)

National Institute of Lorraine, France (1996)

St. Petersburg Mining Academy & Technical University, Russia (1996)

Professor Emeritus: University of Minnesota, United States (1997)

Advisory Professor: Tongji University, Shanghai, China (1995)

Distinguished Professor of Mining Engineering & Rock Mechanics:
University of Minnesota, United States (1982)

Leopold Muller Award, ISRM (2003)

U.S. National Committee on Rock Mechanics, Special Award: 25 Years of Distinguished Achievements (1983)

American Underground Space Association, Pergamon Medal (1981)

AIME Outstanding Achievement Award, Rock Mechanics (1972)

Inter-Society Committee on Rock Mechanics Medal: Best Rock Mechanics Research Paper, with B. Haimson (1970)

Professional Experience

<i>1997 – Present</i>	<i>Itasca Consulting Group, Inc., Minneapolis, Minnesota</i>
<i>1981 – 1999</i>	<i>Senior Consultant</i>
	<i>Chairman</i>
	<i>University of Minnesota, Minneapolis, Minnesota</i>
<i>1997 – Present</i>	<i>Professor Emeritus</i>
<i>1991 – 1997</i>	<i>T.W. Bennett Professor of Mining Engineering & Rock Mechanics</i>
<i>1983 – 1991</i>	<i>E.P. Pfleider Professor of Mining Engineering & Rock Mechanics</i>
<i>1972 – 1987</i>	<i>Department Head of Civil & Mineral Engineering</i>
<i>1948 – 1956</i>	<i>National Coal Board, England</i>
	<i>Mining Engineer Trainee</i>

Project Experience

Dr. Fairhurst, Senior Consultant with Itasca, has more than 55 years of experience in mining rock mechanics and has consulted on rock stability problems for tunnels, dams, mines and excavations throughout the world. He has also been actively engaged internationally for more than 30 years in the problems of geological isolation and intermediate-level nuclear waste.

Dr. Fairhurst has supervised 25 Ph.D. students at the University of Minnesota on a variety of topics in basic and applied rock mechanics.

Civil Engineering

Laboratoire Mixte (Application of Mathematics and Physics to Civil Engineering), CNRS/LCPC, Marne La Vallée, France — Member, Conseil Scientifique (1993 – 1997)

Spie Batignolles, France, Member, Board of Experts, Guavio Hydroelectric Project, Colombia (1985 – 1989)

National Science Foundation — Member: Division of Applied Research Review Panel (1978 – 1980); Conference Steering Committee, Initiatives in the States Program (1985 – 1986); Engineering Advisory

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Board (1982 – 1985); Division of Policy and Analysis Review Panel (1978 – 1979); U.S. Centrifuge Facility Selection Panel (1977 – 1978); U.S. NSF/AIME Delegation to the Soviet Union (1977); Advisory Panel on Engineering Mechanics (1976). Chair: Advisory Sub-Committee on Civil and Environmental Engineering (1982 – 1984);

U.S. Army Corps of Engineers — Consultant, R. D. Bailey Dam (1977 – 1981)

U.S. Geological Survey — Member, Advisory Panel on Earthquake Research (1973 – 1977)

U.S. Army Corps of Engineers — Consultant, Niagara Falls Preservation Project (1968 – 1974)

Mining

Petrobras Mineracao Corporation, Brazil — Consultant, Potash Mine Design (1975 – 1989)

Mines Dominiiale de Potasse d'Alsace, Thailand — Potash Mine Design (1981 – 1983)

Martin Marietta Corporation — Consultant, Lunar Drilling and Rock Blasting Programs (1973 – 1975)

National Academy of Science/National Research Council — Chair, Committee on Feasibility of Returning Coal Mine Wastes to Underground (1973 – 1974)

American Institute of Mining Engineers — Member, Committee on Rock Mechanics (1969 – 1973)

Nuclear Testing & Waste Isolation

Chairman, IAEA (Vienna) International Centres of Excellence Network – Waste Disposal Technologies (2003 – 2007)

Member, Science and Technology Panel, Office of Civilian Radioactive Waste Management, U.S. Department of Energy (2002 – 2006)

ANDRA (French Radioactive Waste Agency) — Member, Conseil Scientifique (1993 – 2005)

Atomic Energy of Canada Limited (AECL) — Chair, Peer Review on the Tunnel Sealing and Mine-by-Experiments at the Underground Research Laboratory, Pinawa (1995 – 2004)

Ecole Polytechnique, Palaiseau, France — Member, Conseil Scientifique de G.3S, Groupement pour l'Etude des Structures Souterraines de Stockage (Underground Waste Storage Group) (1992 – 2003)

Member, Monitored Geological Repository (MGR) Advisory Board, Yucca Mountain (1999 – 2001)

International Geomechanical Commission — Chair, invited by the French Government to study the effects of underground nuclear tests in French Polynesia on the stability and hydrology of the atolls Mururoa and Fangataufa (1995 – 1999)

U.S. Nuclear Regulatory Commission (NRC) — Member, Advisory Committee on Nuclear Waste (1997 – 1999)

U.S. National Academy of Sciences/National Research Council — Member, Committee on Technical Bases for Yucca Mountain Standards (1993-1995); NAS/NRC Committee on Rethinking High Level

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Waste Disposal [Report 1990]; NAS/NRC Panel on the Savannah River (Nuclear) Plant (1978); NAS/NRC Advisory Panel on Bedrock Disposal (Underground Disposal of Radioactive Wastes) (1971)

International Stripa Project, Sweden: Member, Project Overview Committee (1993)

U.S. National Academy of Sciences — Vice Chair: Board on Radioactive Waste Management (BRWM) (1989 – 1995); BRWM Waste Management; Chairman, Waste Isolation Pilot Project (WIPP) Committee (1989 – 1997). Senior Advisor, WIPP Advisory Panel (1985 – 1989)

U.S. Office of Science and Technology (OST) — Member, Policy Panel on U.S. Radioactive Waste Management Program (1978)

U.S. Atomic Energy Commission (AEC) — Member, Oak Ridge National Laboratory Advisory Panel on Radioactive Waste Disposal in Lyons Salt Mine, Kansas (1971)

Rock Mechanics

National Science Foundation (2004 – present). Advisor on Geoscience and Engineering (S1 et seq.). DUSEL (Deep Underground Science and Engineering Laboratory)

Los Alamos Scientific Laboratory, New Mexico — Member, Hydraulic Fracturing, Geothermal Energy, and Rock Blasting Studies (1975 – 1981)

American Society of Civil Engineers — Chair: Committee on Rock Mechanics (1978 – 1980); ASCE/AIME Underground Construction Research Council (1974 – 1975)

International Congress on Rock Mechanics — Chair, Technical Program (1974)

American Society for Testing and Materials — Member, Subcommittee on Rock Mechanics (1966 – 1969)