

Prof John Napier

Prof Napier originally trained as a chemical engineer at the University of the Witwatersrand (Wits), graduating with a BSc degree in 1967. After working in the oil refinery industry for two years, he completed an MSc in Chemical Engineering at Wits. He then joined the Chamber of Mines Research Organisation (COMRO) and worked extensively on problems of operations research relating to coal mine production planning and gold mine planning. He completed his PhD at Wits in 1980 with research focused on the development of an econometric model of gold mine capital expenditure and the analysis of optimal cut-off grade selection policies. While at COMRO (and later the CSIR Division of Mining Technology), he developed a computer code for the analysis of large-scale tabular mining excavations (MINSIM-D) that has been used extensively in the South African gold mining industry.

Prof Napier is an extraordinary professor in UP's Department of Mining Engineering and an adjunct professor in the Department of Civil, Environmental and Geo-Engineering at the University of Minnesota, USA. He supervised or co-supervised six PhD students in work related to rock mass behaviour research at the CSIR between 1990 and 2004; three of whom (including Prof Francois Malan) received the prestigious Rocha medal of the International Society of Rock Mechanics for the best PhD thesis in rock mechanics.

His research interests have included the econometric modelling of deep mine capital expenditure and the application of optimal control methods for the selection of cutoff grade levels in tabular gold mining. Since 1980, he has concentrated on the development of displacement discontinuity boundary element methods to simulate fracture propagation. His research has resulted in the development of several novel computer codes for the simulation of fracture growth and for tabular mine excavation modelling and design. Prof Napier was elected as an international member of the American National Academy of Engineering (NAE) in 2018 and is a Fellow of the Southern African Institute of Mining and Metallurgy (SAIMM). He has authored and co-authored 43 papers in peer-reviewed journals and approximately 47 national and international conference papers.



QUALIFICATIONS