**CITATION: PROFESSOR DANIEL GERHARDUS KRIGE**

Daniel G Krige (1919) matriculated in 1934 at the age of 15 years, and graduated with a BSc (Eng) degree in Mining Engineering from the University of the Witwatersrand in 1938 at the age of 19 years. He then joined Anglo Transvaal working on gold mines until 1943 when he joined the Government Mining Engineers’ Department, where he worked for 8 years.

During this period he began his pioneering work in the application of mathematical statistics to the valuation of new gold mines, using a limited number of boreholes and ore reserves for existing mines. His early papers on the application of mathematical statistics, some republished in French, created world-wide interest that led to the development of the science and concepts that surround the spatial evaluation of mineral resources and reserves known as geostatistics. This technique has contributed to improved ore evaluation techniques as well as the reduction of the financial risks associated with investment in mining enterprises. Furthermore, it led to the recognition of his contributions to the evaluations of mineral deposits through the coining of the term ‘kriging’ that is used to describe a spatial mineral evaluation process known and practised in international mining circles. On his return to the industry he continued his work in geostatistics as Group Financial Engineer of the Anglovaal Group until his retirement from this position in 1981, and thereafter for ten years, until 1991, as Professor of Mineral Economics at the University of the Witwatersrand, Johannesburg.

His 1951 paper, based on his MSc thesis in the Department of Mining Engineering at the University of the Witwatersrand, expounded his pioneering work in geostatistics in more detail. His early research papers that had stimulated interest in several mining circles overseas were republished in French in 1955, resulting in a major research effort by French mining engineers in this field. This led to the establishment of the now world-renowned French School of Ore Evaluation in Fontainebleau, Le Centre de Geostatistique de l’Ecole des Mines de Paris.

Daniel has published some 90 technical papers, both locally and internationally – including in Russia, and has lectured and participated in international congresses in many countries. His contributions were recognized by the University of the Witwatersrand through the award of the DSc (Eng) in 1963, by three honorary degrees (from the universities of Pretoria, UNISA and Moscow State Mining University). He has received merit awards from the South African Institute of Mining and Metallurgy, including two gold medals in 1966 and 1980 and two silver medals in 1979 and 1993. In 1984 he received this Institute’s highest award, i.e. the Brigadier Stokes platinum medal. He was awarded the William Krumbein medal from the International Association of Mathematical Geology in 1984, the Gold Medal for Scientific and Technical Achievements from the S A Akademie vir Wetenskap en Kuns in 1982, the Distinguished Achievement Award from the APCOM International Council in 1989 and in the same year, the Percy Fox Foundation Award in South Africa. In 1987 Daniel received from the American Society of Mining Engineers one of its highest awards, the Daniel Jackling Award, and in 1988 he was made a ‘Distinguished Member’ - in both cases the first and only South African to receive these honours. In 1992 the University of Antofagasta in Chile also honoured him with a special award.

The South African State President awarded him with the Order for Meritorious Service Class 1, Gold in 1989. In 1998 The Royal Society of South Africa awarded him the John F Herschel Medal for outstanding contributions to science in South Africa.

He was South Africa’s representative on the International APCOM Council since its inception and initiated the arrangements for the Symposium to be held in South Africa in 1972, again in 1987, and assisted in the preparation of this Symposium in Cape Town in 2003. He served as Chairman of the International Council, the first non-USA member to be elected, from 1990 to 1993.

In recognition of Daniel Krige’s distinguished contributions to engineering, he was elected a Foreign Associate of the United States National Academy of Engineering (NAE) Section 11, Earth Resources Engineering, in February 2010. The induction ceremony for the NAE Class of 2010 was held on 03 October 2010, during the NAE Annual Meeting in Washington, DC. The ceremony was the formal inauguration of the new members and foreign associates into the Academy. Daniel is the first South African to ever receive this award from the NAE.

The outstanding feature of Daniel Krige’s contributions has been his focus on and dedication to the basic tenets of geostatistics, and the use, wherever practical, of large databases to undertake practical follow-up studies. This style of approach to statistical and geostatistical research became apparent in his initial 1950/2 work and has consistently underpinned his research. His rigorous practice of verifying new geostatistical techniques using large data sets allowed him to test and audit their applicability and interrogate alternative approaches.

His high standards of research have contributed significantly to the advancement of the science of geostatistics and provided many fruitful avenues for future research. His contributions are a tribute to his lifetime of dedication, making him a worthy leader and example for all who practice and research in the field of geostatistics.