



Dr. Daniel W. H. Su
Recipient for the 2005 Syd S. Peng Ground Control in Mining Award

LETTER OF NOMINATION

It is both an honor and privilege for me to nominate **Dr. Daniel W. H. Su** for the inaugural **Syd S. Peng Ground Control in Mining Award**. I can think of no better candidate than Daniel that is deserving of this award – an award to recognize technical excellence in advancing ground control technologies [and] approaches.

Daniel's education and career spans over three decades. Having graduated from National Cheng Kung University in Taiwan in 1972 with a B.S. degree in Mining and Petroleum Engineering, he spent the next four years in the Taiwanese military and mining industry, before moving to the United States, where he enrolled in West Virginia University's Mining Engineering Department. He received his M.S degree in Mining Engineering from WVU in 1978; then in 1982 became the *first* person to ever receive a Ph.D. in Mining from WVU. His thesis was titled, "Development of Ultrasonic Techniques for the Measurement of In Situ Stresses".

From 1982 to 1986, Daniel served as a Research Assistant Professor for West Virginia University Department of Mining Engineering, where he taught ground control related subjects and assisted Dr. Peng with three chapters of his now famous books, Coal Mine Ground Control and Longwall Mining.

In 1986, Daniel joined CONSOL Energy (then Consolidation Coal Company) in the Research and Development Department, where he attained the level of Senior Research Scientist. In 2001, Daniel was transferred to CONSOL's CNX Coal Operation Support group, where he now serves as Geomechanical Engineer.

During his almost 20-year career with CONSOL, Daniel has served a vital role in helping to oversee all aspects of geotechnical design and problem solving for all of CONSOL Energy's Coal operations, which currently include as many as 14 underground mining complexes and 13 longwalls, and accounts for approximately 70 million tons of production. He is highly respected within CONSOL at all levels of management, as well as by his engineering peers and everyday coal miners. He is an integral part of CONSOL's success, particularly in the areas of safety and productivity.

Daniel is also both well known and highly respected outside of CONSOL, particularly among his peers in the coal mine ground control community. For instance, he is a staple at West Virginia University's own International Conference on Ground Control in Mining, having participated for 22 of its 24 years of its existence, and having presented or (co)authored 14 papers. His conference presence can be summed up by the expression, "When *Daniel* talks, everyone listens" – primarily because they know his presentations, commentary, questions, and feedback will be both meaningful and insightful. His unique position in understanding both the academic and industry perspectives of a subject matter undoubtedly lends to such respect.

Almost unheard of as an industry professional, Daniel has authored, or coauthored a total of 23 published papers on ground control related subject matters, 17 of them while working in industry. His public contributions to ground control span a wide range of subjects, including (in no particular order) longwall geomechanics, subsidence, shield design, pillar design, entry stability, floor stability, roof and rib support, horizontal stress, and in situ stress measurement. Daniel's published work has usually been on the leading edge. His papers are always significant and often referenced. A few of Daniel's more significant contributions are as follows:

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Daniel's studies pertaining to longwall geomechanics and numerical modeling - particularly the identification, understanding, and modeling of slip shear mechanisms - were not only pioneering, but a major development toward accurately modeling longwall caving, subsidence, and pillar-entry stability. *In my opinion*, though not often credited, this work served as the basis for many improved geomechanical numerical models, among them LAMODEL.

Another landmark effort includes his collective studies and publications pertaining to horizontal stress concentration and stress shadowing around longwall faces, concepts so well accepted today, that they are common language in the ground control community.

His work in the area of coal pillar design and modeling was also landmark - in particular, demonstration that roof and floor constraint is more significant than insitu coal strength for estimation of large-scale coal pillar strength. This study was utilized by NIOSH (Mark, et. al) to help justify the use of a universal coal strength for ALPS and ARMPS.

Among Daniel's published case studies, one contribution in particular stands out - the use of hydraulic fracturing to delaminate a massive sandstone unit in the longwall gob, thereby reducing frontal abutment stress for longwall face supports. To my knowledge this was the first-ever published paper demonstrating successful application of hydrofracing for stress relief of a longwall gob.

Above and beyond his published work, Daniel has quietly played a key role within CONSOL toward the advancement of many ground control technologies used throughout the industry. For instance:

In the mid 1990's, he served an integral role toward the rapid introduction of cable bolts into the Eastern U.S., working with vendors, MSHA, and company representatives to prove (and improve) cable bolt capability, reliability, and value.

Over the last 10 years he has continued to work with manufacturers, MSHA, and NIOSH to test and enhance many bolting technologies and various types of standing supports.

Since the early 1990's, Daniel's efforts -through CONSOL specification - have convinced various shield manufactures to improve shield base design in order to reduce base loading and related floor-bearing failure. The end result - reducing longwall face ground control problems and related production delays - has paid huge dividends to not only CONSOL, but also to the entire coal mining industry.

In 1995 Daniel also helped design, implement, and validate backfilling methodology for longwall mine-through scenarios. Subsequent applications outside of CONSOL were published in following years.

In summary, throughout his entire ground control career, Dr. Daniel Su has demonstrated technical excellence in advancing ground control science and technology. I hope you will agree me, and support this nomination for him as the inaugural recipient of the Syd S. Peng Ground Control in Mining Award.

Should you have any questions, or require further elaboration or supportive evidence, feel free to contact me.

For more information regarding the nomination and selection criteria, please visit the website:

smentet.org/SCRD/SCRDviewaward.cfm?BUID=0&typeID=44