

Dr. Mark Kuchta

- Associate Professor, Mining Engineering Department, Colorado School of Mines
- Previous to CSM:
 - 10 years with the Swedish mining company LKAB, Kiruna, Sweden
- Degrees:
 - BS & MS, Colorado School of Mines
 - PhD, Luleå University of Technology, Sweden



Mark Kuchta: Teaching and Research

Academic Activities:

- CSM Courses (in past 5 years):
 - MNGN 210 “Introductory Mining Engineering”
 - MNGN 300 “Mine Surveying”
 - MNGN 309 “Mining Engineering Laboratory”
 - MNGN 314 “Underground Mine Design”
 - MNGN 333 “Explosives Engineering I”
 - MNGN 407 “Rock Fragmentation”
- Education Innovation:
 - Numerous special topics courses at both undergraduate and graduate levels

Research Activities:

- Underground Mining Systems of the Future
- Operations Research in Underground Mine Scheduling
- Gravity Flow of Broken Rock –Cave Mining

Mark Kuchta: Current Research Projects

- Underground Mining Systems of the Future
 - Funded by: In the development phase
 - Co-PIs:
- Operations Research in Underground Mine Scheduling
 - Funded by: In the development phase
 - Co-PIs:
- Gravity Flow of Broken Rock
 - Funded by: In the development phase
 - Co-PIs:

Underground Mining Systems of the Future

Project objectives: Develop a vision of the underground mining systems and processes of the future.

- Improve worker safety and achieve zero accidents.
- Incorporate principles of sustainability and reduced energy consumption.
- Identify key problems in current mining systems that should be improved in the mine of the future.
- Move from unit operations based production to continuous flow, process oriented production systems.
- Increase the levels of mechanization, mine automation, and robotics.
- Develop designs where mineral processing is done underground, waste material used immediately as backfilling of excavations, with only the final concentrate hoisted to the surface.

Funded by: In the development phase

Funded Period:

Principal Investigator:
Dr. Mark Kuchta



Operations Research in Underground Mine Scheduling

Project objectives:

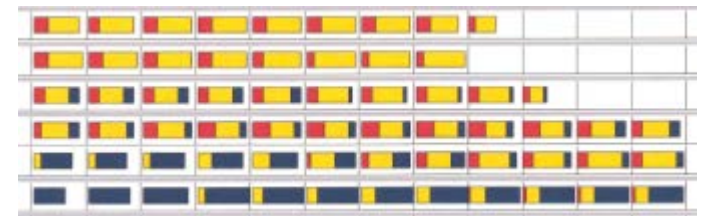
- Faster, more powerful computers together with new algorithms and software to make solving underground production scheduling problems faster and allow for much larger problems than have been possible in the past.
- Identify the most significant recent improvements in algorithms for underground mine scheduling and optimization.
- Develop efficient solutions to large scale underground mine production scheduling problems.

Funded by: In the development phase

Funded Period:

Principal Investigators:

Dr. Mark Kuchta



Gravity Flow of Broken Rock

Project objectives:

- An understanding of the gravity flow of broken rock is essential for the proper design of underground cave mining systems such as block caving and sublevel caving.
- Although much research has been done in the past, the problem is extremely difficult and much remains to be understood.
- A good understanding of the gravity flow of broken rock in cave mining will allow for the optimization of design aspects such as draw point spacing that in turn will yield maximum resource recovery at the lowest waste rock dilution possible.

Funded by: In the development phase

Funded Period:

Principal Investigators:

Dr. Mark Kuchta

