

Southern Illinois University at Carbondale
CURRICULUM VITAE OF YOGINDER P. CHUGH
May 2009

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I. PERSONAL

Name: Yoginder P. Chugh
Present Address: Mining and Mineral Resources Engineering (MMRE)
Southern Illinois University
Carbondale, IL 62901
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E-Mail: ypchugh1@yahoo.com, chugh@enr.siu.edu

Present University Position: Professor of MMRE and Director, Combustion Byproducts Recycling Consortium- Midwestern Region
U.S. Citizen since 1975

II. EDUCATION

- B.S., Mining Engineering, Banaras Hindu University, India, 1961
- M.S., Mining Engineering, The Pennsylvania State University, 1968
- Ph.D., Mining Engineering, The Pennsylvania State University, 1971
- Additional courses in Soil Mechanics, Operations Research, Statistics and Business, Illinois Institute of Technology and MBA coursework from the University of Chicago, 1972-1973

A. Short Courses

- "Coal Conversion and Utilization," Faculty Research Institute, Argonne National Laboratory, Argonne, IL, (5 days), June 1977
- "Current Developments in Rock Engineering," Massachusetts Institute of Technology, (5 days), June 1978
- "Energy Planning," Faculty Institute, Argonne National Laboratory, Argonne, IL, (5 days), June 1979
- "Development and Sustainable Environment," USAID Seminar, Washington, D.C., April, 1992
- "Physical and Engineering Properties of Polymers" Society for Plastics Engineers, Chicago, Illinois, 2000
- "Beneficial Use of Aggregate Fines" University of Texas at Austin, International Center for Aggregates Research, Sabbatical Leave- July 2000 to December 2000
- "Plastics Testing", ASTM 3-day Seminar, Savannah, Georgia, March 2001

III. PROFESSIONAL EXPERIENCE

A. Positions Held

- Adjunct Professor, Indian School of Mines, Dhanbad, India July 1, 2007 to Present
- Professor of MMRE, and Director, Combustion Byproducts Recycling Consortium- Midwestern Region, July 1, 2000 to Present
- Professor, and Chairman, Department of Mining Engineering, July 1984 – June 2000
- Director, Management of Dry FGD By-Products in Underground Mines, 3.0 million dollar Cooperative Agreement, U.S. Department of Energy, October, 1993 to September 30, 1999.
- Director, Illinois Coal Combustion Residues Management Program, July, 1991– June, 2000
- Director, Illinois Mining and Minerals Research Resources Institute, Jan. 1988 – 1999.
- Technical Director, National Mine Land Reclamation Center: Midwestern Region, June 1988 - June 30, 1995.
- Professor, Department of Mining Engineering, August 1981 - June 1984.
- Acting Chairman, - September 1980 - August 1981
- Associate Professor, January 1977 - July 1981.
- Planning Engineer, AMAX Coal Co., October 1974 - January 1977
- Research Engineer, IIT Research Institute, November 1971 - September 1974.
- Research Associate, Henry Krumb School of Mines, January 1971 - October 1971.

- Research Assistant, The Pennsylvania State University, June 1965 - December 1970.
- Instructor, Banaras Hindu University, July 1964 - June 1965.
- Assistant Manager, Andrew Yule Coal Co., April 1961 - June 1964.

B. Membership in Professional Associations

- American Institute of Mining Engineers (1965-present)
- Illinois Mining Institute (1974-present)
- Indiana Mining Institute (1974-2000)
- American Society for Testing Materials (1972-1973)
- Society for Experimental Stress Analysis (1972-1973)
- Sigma Xi (1970-1973)
- Tau Beta Pi (1989 - Present)
- International Bureau of Strata Mechanics (1984-2000)
- Member ABET Board of Directors (1989-1992)
- Member, American Society for Engineering Education (1985-2000)
- Member, Technology Accreditation Commission, (1995-1997)

C. Citations/Awards (Major)

- SME Publications Board Award, 1982, 1983
- American Men and Women of Science, 1982
- Who's Who in Engineering, 1982, 1985, 1986, 1987, 1990, 1992, 1995, 1997, until Present
- Distinguished Alumnus Award, Banaras Hindu University, 1984,
- Outstanding Teacher, Department of Mining Engineering, 1984-1985,
- Outstanding Teacher, College of Engineering, 1984-1985
- Who's Who in the Midwest, 1988
- Nominated for Rock Mechanics Award, 1991.
- Who's Who of American Inventors, 1992
- Who's Who in Science and Engineering, 1993, 1994, 1995, 1997
- Who's Who in America, 1995
- Centennial Fellow (Outstanding Alumni Achievement) Award, Penn State University, 1996
- Professor of the Year Award, National Stone Association, 1999,
- Outstanding Teacher, Department of Mining and Mineral Resources Engineering, 2003
- Outstanding Scholar Award, SIU College of Engineering, 2005
- Outstanding Teacher, Department of Mining and Mineral Resources Engineering, 2005
- Fulbright Award for developing Environmental Science and Engineering programs in India, 2006
- Nominated for Distinguished Member, Society for Mining Engineers, 2006,
- Outstanding College Faculty member Award, 2007,
- Invited by Fulbright Institution to provide additional assistance, March 2007
- IMI Award for Excellence (Industry support), September 2008
- The Rock Mechanics Award (highest recognition in rock mechanics), SME February 2009
- The Howard Eavenson Award (very high recognition in coal mining), SME February 2009

Invited and Keynote Lectures

- Invited Speaker, S. K. Bose Memorial Lecture, (Highly prestigious) Indian School of Mines, February 2003
- Keynote Speaker, International Conference on Processing of Gondwana Coals, Calcutta, India, February 2003
- Keynote speaker, International Mineral Processing Technology Conference, Indian School of Mines, January 6-8, 2005
- Keynote Speaker "Indo-Australia Joint Conference on Environmental Issues in Mineral Industries, November 19 2007
- Invited by Coal India to provide ground control expertise for their mines, November 2007,

- Invited Plenary Session Speaker, 16th International Conference of Mine Planning and Equipment Selection, Bangkok, Thailand, December 11-13, 2007.
- Keynote Speaker, Indo-South Korea Conference on Geotechnical Science and Technology: An International Conference, February 2008.

TEACHING RELATED INFORMATION

IV. TEACHING EXPERIENCE

A. Teaching Interests and Specialties:

- Soil and Rock Mechanics (Current)
- Ground Control and Subsidence (Current)
- Surface Mining and Land Reclamation (1977-1987)
- Production Engineering (Mid 1980's)
- Experimental Methods in Engineering (1990's)

B. Courses Taught

- Soil Mechanics and Foundation Engineering
- Rock Mechanics and Ground Control
- Design of Excavations in Rock
- Experimental Rock Mechanics
- Advanced Rock Mechanics
- Advanced Ground Control
- Surface Mining and Land Reclamation
- Operations Research and Computer Applications
- Experimental Methods in Engineering
- Principles of Mining Engineering
- Introduction to Mining (Non-Mining Majors)
- Production Engineering in Coal Mines

C. Current Graduate Faculty Status

Direct Dissertation

D. Number of Students Who Have Completed Master's Theses and Doctoral Dissertation under My Direction

Graduated 59 MS and 4 PhD students until June 2008. Currently guiding four (4) PhD students.

One additional MS student expected to graduate in December 2008

E. Number of Post-Doctoral Staff Under My Direction

More than 12 from different countries (Poland, China, India, Brazil, and Australia).

F. Teaching/Education Related Honors

- Outstanding Teacher, Department of Mining Engineering, 1984-1985
- Outstanding Teacher, College of Engineering, 1984-1985
- "Identification of Training Needs and Preparation of Implementation Plans for Coal Specialization Degrees in Indonesia," Subcontractor to Diversified Management Services Toronto, Canada, under a World Bank Grant, 1987-1988
- Chair, Educational Issues Committee, Society of Mining Engineers, 1980-1991
- ABET Reviewer, Technology Programs, 1988-Present,
- Invited Visiting Professor, University of Missouri-Rolla, 1989.
- Member, Board of Directors of the Accreditation Board for Engineering and Technology, November 1989-October 1992
- Alternate Director, Technology Accreditation Commission, 1994-1995
- Director, Technology Accreditation Commission, 1995-1997,
- Two-Day Invited Short course on Rock Mechanics, Sao Paulo University, Brazil, 1999
- Panel Chair, Mining and Mineral Resources Engineering Education in the US,

International Conference on Engineering Education: Progress through Partnership, August 13-15, 1998

- Consultant, Reorganization of Academic Programs, Indian School of Mines, 2000,
- Invited speaker, Civil Engineering, Ohio State University, May 2002
- Outstanding Department Teacher 2003
- Outstanding Department Teacher, 2005
- Fulbright Award, 2006
- Appointed Adjunct Professor, Indian School of Mines, 2007
- Outstanding College Faculty member Award, 2007
- Invited by Fulbright Institution to provide additional assistance, March 2007

G. International Activities

- Developed a "Memorandum of Agreement" for cooperation in academic exchanges with China University of Mining and Technology in 1984 which is still active. One of the most successful MOA at SIUC.
- Developed "Implementation Plans for Mining Engineering and Mining Technology Programs for Indonesia, 1989.
- Assisted in the Development and Implementation of MOU between the College of Engineering and Institute of Mining and Metallurgy, Ostrava, Czechoslovakia, October 1991.
- Developed cooperative relationships with University of Wollongong, Australia and National University of Mexico, Mexico City, 1993-1994.
- Hosted a United Nations Sponsored extensive training program for four Chinese mining engineers on underground waste mine treatment, June 18 - August 2, 1996.
- Hosted a Polish Team (Partners in Economic Reform) on issues related to mine, health and safety, April 1996.
- Developed an innovative joint MS program with China Coal Research Institute, China University of Mining and Technology, SUN Yeqi Foundation, March-November 1997. The first group of students arrived on campus in June 1998.
- Visited Indian School of Mines five (5) times over the last five years to discuss education and research between the two institutions.
- Awarded Fulbright Fellowship to develop Environmental Science and Engineering Programs at the Indian School of Mines, Dhanbad, India 2006
- Keynote Speaker "Indo-Australia Joint Conference on Environmental Issues in Mineral Industries, November 19 2007
- Invited by Coal India to provide ground control expertise for their mines, November 2007
- Keynote Speaker, International Conference of Mine Planning and Equipment Selection, Bangkok, Thailand, December 11-13, 2007.
- Keynote Speaker, Indo-South Korea Conference on geotechnical Science and Technology: An International Conference, February 2008.
- Invited by Fulbright Institution to provide additional assistance, March 2007,
- Invited and Accepted to become Adjunct Professor at Indian School of Mines, 2007

RESEARCH RELATED INFORMATION

V. RESEARCH EXPERIENCE

A. Current Research Interests and Specialties:

- Applied and Experimental Rock Mechanics
- Strata Control and Mine Subsidence
- Dust control in coal mining
- Large Volume Management of Coal Combustion Byproducts
- Development of Materials Using Coal Combustion By-Products
- Use of combustion byproducts for automotive brakes development
- Operations Research Applications to Mining
- Integration of Mining, Processing, and Power Plant operation.
- Market penetration of IGCC in the U.S. Markets.

B. Current Research Projects:

- Field Performance of Studies of Coated Chains on continuous miners for Noise Control, October 1, 2008 to November 2009,
- Field Demonstration of Novel Dust Control Concepts for Mine Roadways and Continuous Miners, October 1, 2008 to February 2010,
- Monitoring and Analysis of SIUC engineered Cribs in two Longwall Mining Areas, October 1, 2008 to January 2009
- Development of Improved of Roof Support Systems for Illinois Underground Mines, Illinois Clean Coal Institute, October 1, 2007 to February 2009.
- Respirable dust control in room-and-pillar and longwall mining operations, Illinois Clean Coal Institute, October 1, 2007 to January 31, 2009.

Recent Completed Projects

- Development and Demonstration of An Alternate Mining Geometry for Enhanced Stability and Productivity, Phase I and Phase II, 2006
- Development of Best Management Practices to Minimize Sulfate and Chloride Discharges from Coal Mines in Illinois ICCI, 2006
- Development and Demonstration of Advanced Mining Technologies to Reduce Production Costs. PI: Y.P. Chugh, Co-Pi Mike McGolden, Funded by Illinois Clean Coal Institute, 2002-2006
- Development and Demonstration of Coal Combustion Products Based Road Subbase, PI: Y.P. Chugh, Co-PI: Calvin Hance, Funded by Department of Commerce and Community Affairs, State of Illinois, 2000- 2005
- Industry-Government-University Cooperative Research Program for Development of Combustion Byproducts Based Poles for Electric Utility Industry, PI: Y.P. Chugh, Funded by CBRC(USDOE)/ICCI, 1999 to 2005
- Demonstration of Coal Industrial Park for Illinois Coal Industry Enhancement, PI: Y.P. Chugh, Funded by Clean Coal Review Board, 2000 to Present
- Development of Materials for Cattle Feedlots on Farms Using Sulfite-Rich Scrubber and Fly Ash-Phase II, Funded by DCEO/ICCI, 2004-2005.
- Post-Construction Performance Studies of Coal Combustion Byproducts-Based Road Sub-base, Funded by DCEO/ICCI, 2003-2005.
- A Field Demonstration of Joy Wet-Head Miner in Illinois, Funded by DCEO/ICCI, 2005-2006.
- CBRC Administration, Funded by CBRC/USDOE, 1998-2008.

C. Patents

- Chugh, Y.P., "An innovative Approach for Management of Waste Coal Slurry with Coal Combustion Byproducts", April 2003.
- Chugh, Y.P "Coal Combustion Byproducts Based Lightweight Structural Materials and Processes for Making Them", Patent No. 6,277,189, August 21, 2001. 40 pp
- Chugh, Y.P. et al, "Intersection Roof Truss," Patent No. 5,018,907, May 1991
- Chugh, Y.P. et al, "Mine Roof Truss System," Patent No. 4,946,315, Aug. 1990.

- Chugh, Y.P., 2006 "Coal Combustion Byproduct Based Friction Materials for Automotive Brakes, Provisional Patent application filed, October 2006.
- Chugh, Y.P., 2007 "Coal Combustion Byproduct Based Friction Materials for Automotive Brakes, Patent application filed, October 2007. (Patent Pending)
- Chugh, Y.P. (2007), Engineered Composite Wooden Crib as a Mine Support", Filed September 13, 2007, (Patent Pending)

Intellectual Property Disclosures

- Innovative Spray System for Dust control on continuous Miners, 2006
- Novel Full-Entry Width Filter Concept for Dust Control, 2008
- A Novel wetting Agent for Dust Control, 2008

D. Research Honors and Awards (Selected)

- One of five task force members from AMAX Coal Co. to prepare a report on feasibility of developing a 13 million ton lignite project in North Dakota, November 1975-April 1976.
- Awarded six-week assignment under a United Nations program to assist in rock mechanics research and development activities in India, 1981.
- Two week grant from United Nations, Central Mining Planning and Design Institute, Ranchi, India, 1982.
- Publications Board Award, Society of Mining Engineers, 1982, 1983.
- Chairman, Surface Mining Unit Committee, 1985-1986.
- Chairman, "Task Group on In-Situ Uniaxial Tests," International Society for Rock Mechanics Commission on Testing Methods, 1986.
- Chairman, Second International Conference on Processing and Utilization of High Sulfur Coals, Southern Illinois University, Carbondale, IL, Sept. 1987.
- Invited Speaker, Department of Mining Engineering, West Virginia University, Morgantown, W.V., September 1988.
- Invited Visiting Professor, University of Missouri-Rolla, 1989.
- Member, Organizing Committee, 7th International Ground Control Conference, West Virginia University, Morgantown, W.V., June 1988.
- Member, Organizing Committee, Multi-national Conference on Mine Planning and Design, University of Kentucky, May 1989.
- Keynote Speaker, "International Conference on Land Subsidence," Central Mining Research Station, Dhanbad, December 11-13, 1989.
- Keynote Speaker, "Sustainable Development: A-B-C of the Global Warming Issue," Indian School of Mines, December 14, 1989.
- Chairman, 4th Ground Control Conference for Midwestern U.S. Coal Mines, October, 1992.
- Chairman, High Sulfur Coal Combustion Residues Management: Issues and Answers, April 5-7, 1994.
- Chairman, 5th Ground Control Conference for Midwestern U.S. Coal Mines, June, 1994.
- Co-Chairman, CCMRI, 1995 International Conference, Beijing, China, October, 1995, Keynote Speaker.
- Invited speaker, Civil Engineering, Ohio State University, May 2002
- S.K. Bose Memorial Lecture Award, Indian School of Mines, India (Director, Indian School of Mines), February 2003.
- Keynote Speaker, International Conference on Gondwana Coals, Calcutta, India, February 2003.
- Session Chair, International Conference on Gondwana Coals, February 2003.
- Session Co-Chair, World Mining Congress, November 2003.
- Member, National Academy of Science Panel "Placement of Coal Combustion Wastes in Coal Mines", September 2004 to December 31, 2004.
- Session Chair, International Mining Processing Conference, Indian School of Mines, January 6-8, 2005.
- Keynote Speaker, International Mining Processing Conference, Indian School of Mines, January 6-8, 2005.
- Outstanding Paper Award, International Fly Ash, India Conference, December 2005

- Invited speaker "Peaking Oil Production: Facts and Challenges, Indian School of Mines, December 6, 2006.
- Keynote Address, International Coal Congress (World Mining Congress) "U.S. Coal Industry: Trends and Challenges," December 11, 2006.
- Keynote Speaker "Indo-Australia Joint Conference on Environmental Issues in Mineral Industries, "Environmental Challenges facing Coal Development", November 19, 2007.
- Keynote Speaker, International Conference of Mine Planning and Equipment Selection, Bangkok, Thailand, December 11-13, 2007.
- Keynote Speaker, Indo-South Korea Conference on Geotechnical Science and Technology: An International Conference, "Prospects for Fly ash Utilization in India, February 2008.
- Session Chair, Agriculture I Session- World of Coal Ash Conference, Covington, Kentucky, June 2007
- Session Chair, Agriculture II Session- World of Coal Ash Conference, Covington, Kentucky, June 2007
- Session Chair, International Conference on Mine Planning and Equipment Selection, Bangkok, Thailand, December 11-13, 2007.
- Invited Plenary Session Speaker, International Conference on Mine Planning and Equipment Selection, Bangkok, Thailand, December 11-13, 2007.

E. Research Grants Received

Principal or Co-Principal Investigator for over 90 research projects with total funding of over \$16 million during the period 1977-2008. If matching support from industries is included, the total amount would be larger than \$22 million dollars. Details of research funding over the last five years (2000-2007) is given in a separate table.

F. International Activities

- Developed a "Memorandum of Agreement" for cooperation with China University of Mining and Technology in 1984 which is still active. One of the most successful MOA at SIUC.
- Developed "Implementation Plans for Mining Engineering and Mining Technology Programs for Indonesia, 1989.
- Developed a MOA with Central Mining Research Station, India in 1991, which is still active.
- Assisted in the Development and Implementation of MOU between the College of Engineering and Institute of Mining and Metallurgy, Ostrava, Czechoslovakia, October 1991.
- Developed cooperative relationships with University of Wollongong, Australia and National University of Mexico, Mexico City, 1993-1994.
- Hosted a delegation from the Ministry of Coal, Peoples Republic of China, January 1994.
- Hosted two delegations from India, November 1994, and August 1995 on clean coal technologies.
- Co-sponsored International CCMRI'1995 Conference on "Rock Mechanics and Strata Control in Mining and Geotechnical Engineering," Beijing, China, October 4-6, 1995.
- Four Week USAID/USDOE assignments to assist India with fly ash utilization issues, March 1996.
- Two week USAID assignment to Poland to assist with Mine Health and Safety Issues, June 1997.
- Hosted a United Nations Sponsored extensive training program for four Chinese mining engineers on underground waste mine treatment, June 18 - August 2, 1996.
- Hosted a Polish Team (Partners in Economic Reform) on issues related to mine, health and safety, April 1996.
- Developed an innovative joint MS program with China Coal Research Institute, China University of Mining and Technology, SUN Yeqi Foundation, March-November 1997. The first group of students (4) arrived on campus in June 1998. These were the best students ever attracted to the department.
- Host, Director, Central Coal Research Institute, India at SIUC, February 14-22, 1998
- Visited Indian School of Mines three times over the last five years to discuss education and research between two institutions (2002-2005).
- Delivered a two day invited workshop on " Placement of CCBs in Mines" for National Thermal Power Corporation, India, January 12-14, 2005

- Organized an invited session on “Management of CCBs in Mining Applications”, International Fly Ash Congress, December 4-7, 2005, New Delhi, India.
- Organized a two-day short course on “Placement of CCBs in Mines”, in cooperation with International Fly Ash Congress, December 4-7, 2005, New Delhi, India.
- Invited senior scientist family by USA and India at Indian School of Mines, February, 2006.
- Delivered an invited lecture jointly sponsored by CSIR Laboratories and Indian School of Mines on “Large Volume CCBs Management: Issues and Solutions”, January 10, 2005.
- Keynote speaker, International Coal Congress, “U.S. Coal Industry: Trends and Challenges” December 11-13, 2006
- Invited speaker “Peaking Oil Production – Facts and Challenges, December 7, 2006, sponsored by Indian School of Mines, Dhanbad, India.

G. Consultantships

1. Worked as an independent consultant with the following organizations since 1977:
 - Illinois Department of Natural Resources, Office of Mines and Minerals
 - AMAX Coal Company
 - Inland Steel Coal Company
 - Peabody Coal Company
 - U.S. Department of Commerce
 - Mobil Oil Company
 - National Mine Service
 - Arch Minerals Corporation
 - U.S. Department of Energy
 - Kerr-McGee Coal Company
 - U.S. Bureau of Mines
 - Zeigler Coal Company
 - Freeman United Coal Company
 - Sahara Coal Company
 - Shell Oil Company
 - Monterey Coal Company
 - Solar Sources Coal Company
 - Patriot Coal Company
 - Exxon Minerals, Inc.
 - BHP Minerals, Inc.
 - Black Beauty Coal Company
 - Liberty Coal Company
 - Indiana Department of Mines and Minerals
 - U.S. Department of Mines and Minerals
 - Harza Engineering
 - Precision Mine Repair 2007
 - Hillsboro Energy Company LLC, 2007
 - Energy Plus Services, LLC, 2007
 - Coal India, Ltd (2007)
 - Sunrise Mining Company 2008
 - Gibson County Coal 2008
2. Central Mining Research Station, Dhanbad, India, Mining Research, December 1977.
3. Central Mining Institute, Katowice, Poland with Professor Kidybinski, design of longwall support systems, September 1978.
4. Academy of Mining and Metallurgy, Freiberg, E. Germany, surface mining and rock mechanics problems, June 1979.
5. "Practical Roof Control in Mining", two-day short course organized to serve the coal industry in Illinois, August 1977, December, 1977.
6. Evaluator, energy-related inventions, Department of Commerce, Washington, DC; evaluated thirty (30) invention applications, 1979-present.

7. "Design of Coal Pillars in Room-and-Pillar Mining", one day short course, Holiday Inn, Marion, IL, June 1983.
8. "Design of Mine Openings in Room-and-Pillar Mining", one day short course, Best Western Inn, Mt. Vernon, IL, April 1984.
9. "SIU Subsidence Prediction Model for Partial Extraction Room-and-Pillar Mining," One day short course, Illinois Mining Institute, September 27, 1989.
10. "Subsidence Engineering," two day short course, Southern Illinois University, Carbondale, IL, October, 1990.
11. UNDP Consultant to Central Mining Research Station, Dhanbad, India, 6 weeks assignment, 1990-1991.
12. Laidlaw Waste Disposal Systems, 1992.
13. Australian Water Authority, B.H.P. Engineering, and Natural Gas Company of Australia, 1993-1994.
14. ICF Kaiser International, 1995.
15. "United States Aid for International Development, Fly Ash Utilization in India," March 1996.
16. "Mine Design Studies For Francisco Property," Black Beauty Coal Company, June, 1996
17. "Subsidence Prediction due to Retreat Mining," Peabody Coal Company.
18. "Feasibility of Coal Combustion By-Products Utilization Around Springfield, IL," Economic Development Director, Springfield, Illinois.
19. Mine Design Studies For an Underground Mine, Solar Sources Company, September, 1996.
20. Co-Chairman, Coal Combustion By-Products Associated with Coal Mining - Interactive Forum," October 29-31, 1996.

H. Evaluation of Manuscripts for Journals and Book Publishers and of Grant Proposals for Agencies

- Reviewed over 250 research proposals for Combustion Byproducts Recycling Consortium
- Reviewed over 80 articles for publications in the Transactions of the Society of Mining Engineers and 40 grant applications for the U.S. Department of Energy, U.S.Bureau of Mines, and Mineral Institutes.
- Reviewed 25 articles for the U.S. Bureau of Mines.
- Reviewed over 75 articles in Rock Mechanics, Mine Subsidence.
- Reviewed over 100 proposals for National Mine Land Reclamation Center, and Coal Combustion Residues Management Program.
- Reviewed over 50 applications for the US Department of Commerce on Energy Related Inventions

PUBLICATIONS RELATED INFORMATION

A. Books and Book Chapters

1. Geotechnical Engineering Related

- "Proceedings of the Fourth Conference on Ground Control for Midwestern U.S. Coal Mines," Editors Y.P. Chugh and G.A. Beasley, Southern Illinois University at Carbondale, August, 1992, pp.400.
- Chugh, Y.P., "Workshop on Design of Coal Pillars in Room-and-Pillar Mining," Southern Illinois University at Carbondale, December 1990, pp. 71.
- Chugh, Y.P., (Editors), Proceedings Third Conference on Ground Control Problems in the Illinois Coal Basin," Mt. Vernon, IL, August, 1990 pp. 392.
- "Proceedings of the Second Conference on Ground Control Problems in the Illinois Coal Basin," Editor Yoginder P. Chugh, May 1985.
- Chugh, Y. P., "Workshop on Design of Mine Openings In Room-and-Pillar Mining," Department of Mining Engineering, Southern Illinois University, Carbondale, IL, 1984.
- Chugh, Y. P. and K. V. K. Prasad, "Workshop on Design of Coal Pillars in Room-and-Pillar Mining, Department of Mining Engineering, Southern Illinois University, Carbondale, IL, June 1983.
- "Proceedings of the Polish-American Conference on Ground Control in Room-and-Pillar Mining," editor Yoginder P. Chugh, Society of Mining Engineers, January 1983.
- "Proceedings First International Conference on Ground Control in Longwall Mining and Mining Subsideance," Editors Yoginder P. Chugh and M. Karmis, Society of Mining Engineers, September 1982.
- "Proceedings of the First Conference on Ground Control Problems in the Illinois Coal Basin," editors Yoginder P. Chugh, A. VanBesien, June 1980.

2. Mining and Others Related

- Chugh, Y.P., B. Sangunett, and K. Vories. K., (Editors) "Proceedings of Coal Combustion By-Products Associated with Mining – Interactive Forum", Southern Illinois University at Carbondale, October 29-31, 1996.
- Chugh, Y.P. et al., (Editors), Proceedings First Midwestern Region Reclamation Conference, Coal Extraction and Utilization Research Center, July 1990.
- "Proceedings of the Second International Conference on Processing and Utilization of High Sulfur Coals," Editors Yoginder P. Chugh and Rodney D. Caudle, Elsevier Science Publishers, New York, 1987.

B. Publications Peer- Reviewed Journals

1. Geotechnical Engineering Related

- Chugh, Y.P, Amit Patwardhan, S. Munish (2007), Design and Demonstration of Cattle Feeding Pads using Coal Combustion Byproducts including Sulfite-Rich Scrubber Sludge", Under Review by Fuel Journal.
- Mohanty, S and Y.P. Chugh (2007) ," Development of fly ash-based automotive brake lining, Tribology International 40 (2007) 1217–1224
- Biswas, D, and Y. P. Chugh (2007), "Analysis of Paste Backfill Grout Flow in Room-and-Pillar Mine Workings," Transaction Society for Mining Engineers.2007
- Chugh, Y.P., S. Mohanty, and P. Filip (2006): Development of Automotive Brake Friction Materials Using Large Volume Illinois Fly Ash," Braking 2006. International Conference, York, England
- Mohanty, S. and Y.P. Chugh (2006), Post-construction Environmental Monitoring of a Fly Ash-based Road Subbase," Practice Periodical on structural Design and construction, Vol. II, no 4.
- Mohanty, S. and Y.P. Chugh (2006), Structural Performance Monitoring of an Unstabilized Fly Ash – Based Road Subbase," Journal of Transportation Engineering, Vol 132, no 12, pp.
- Chugh, Y.P., Patwardhan, A., Gurley, H., Munish, S. and Botha, F., 2006, "Development of Construction Materials Using Sulfite-rich Scrubber Sludge and Fly-ash," Fuel, Vol. 85, No. 16. 2323-2329.
- Chugh, Y.P., (2003), "Stabilization of coal wastes and combustion byproducts", U.S. Patent and Trademark Office, Patent No. 6,554,888, April 29.

- Y.P. Chugh, D. Biswas and Jinrong Ma, (2003) "Simplified concept to assess stability of partially backfilled mine openings: Part 1—Development," Transactions Vol. 314 pp 44-50.
- Biswas, D. and Y.P. Chugh, (2003) "Simplified concept to assess stability of partially backfilled mine openings: Part 2 — Application", Transactions, Volume 314, pp 51 - 54, Society for Mining, Metallurgy, and Exploration, Inc.
- Chugh, Y.P. S. Sengupta, (2003) "Development of Controlled Low Strength Materials Using Large Volume Coal Combustion Byproducts," Transactions Vol. 314 pp 129-137.
- Ma, Jin Rong, D. Deb, Y.P. Chugh (2001)"Analysis of the Effects of Weak Floor Strata on Longwall Face Stability Using Finite Element Modeling", Journal of Coal Science and Engineering, Vol. 7, No. 1, pp. 1-8.
- Chugh, Y.P., M. Pritchard, D. Deb, H. Wilcox (2001) "Development and Demonstration of CCBs-Based Structural Products for Mine Use," Transactions of the Society for Mining, Metallurgy, and Exploration, Inc., 2001.
- Chugh, Y.P., (2001), "Coal Combustion Byproducts Based Lightweight Structural Materials and Processes for Making Them" U.S. Patent and Trademark Office, Patent No. 6,277,189, August 21.
- Chugh, Y.P., W.M. Pytel, (1992) "Design of Partial Extraction Coal Mine Layouts for Weak Floor Strata Conditions", Proc. of the Workshop on Coal Pillar Mechanics and Design, Information Circular 9315, U.S. Bureau of Mines, pp. 32-49.
- Chugh, Y.P., O. Pula, W.M. Pytel, (1990), "Ultimate Bearing Capacity and Settlement of Coal Pillar Sub-Strata," Intl. J. of Mining and Geological Eng., vol. 8, p. 111-130.
- Missavage, R.J., Y.P. Chugh and T. Roscetti (1986), "Subsidence Prediction in Shallow Room-and-Pillar Mines," International Journal of Mining Engineering, Chapman and Hall, March.
- Chugh, Y.P., C. Bandopadhyay and R. D. Caudle (1984), "Effect of Soft Floor on Underground Mining at an Illinois Basin Coal Mine," International Society of Rock Mechanics, Cambridge, England, September.
- Chugh, Y.P., A. Okunola and M. Hall (1980), "Moisture Absorption and Swelling Behavior of the Dykersburg Shale," Transactions of the Society of Mining Engineers.
- Chugh, Y.P. (1974), "Viscoelastic Behavior of Geological Materials under Tensile Stress," Transactions of the Society of Mining Engineers, 256, pp. 259-264, September.
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- Chugh, Y.P. and S. L. Barua (1981), "Planning Integrated Mining and Reclamation," Symposium on Surface Mining, Hydrology and Sedimentology, Proceedings of 1981 Annual Symposium, Lexington, KY, pp. 5-11, December.
- Chugh, Y.P. and G. Heidinger (1980), "Size Distribution and Coal Quality of Refuse from Southern Illinois," *Coal Mining and Processing*, p. 84-87, September.
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In addition to the above lists, there are Over 40 non-reviewed publications. Those are not included here.

D. Research Reports

Over 170 reports to State and Federal agencies and industry based on completed research projects.

E. Papers and Presentations at Professional Meetings

At least two hundred (200) oral technical presentations at national and international conferences in USA and abroad.

At least ten (10) Keynote technical lectures at International Conferences

S.K. Bose Memorial Lecture at the Indian School of Mines, Highly prestigious

SERVICE RELATED INFORMATION

A. College and University (Selected)

- Internal Review Committee, Technology Department, 1978-1980.
- Committee to prepare Bachelor of Mining Engineering Program Proposal for the College of Engineering and Technology, 1977-1978.
- Member, Mining Faculty Search Committee, 1978, 1981, 1984, 1988, 1989.
- Chairperson, Search Committee for Chairman of Department of Mining Engineering, 1979.
- Salary Grievance Committee, Office of the Vice President of Academic Affairs and Research, 1979.
- Chairperson, Engineering Unit Committee of the Curriculum Committee, 1979-1980.
- Faculty Advisor, Society of Geologists and Mining Engineers, 1977-1978, Best Student Chapter Award by SME.
- Faculty Advisor, Society of Geologists and Mining Engineers, 1980-1984, 1990.
- Internal Review Committee, Department of Finance, 1981-1982.
- Curriculum Committee, 1981-1983.
- Chairperson, Ad-Hoc Doctoral Program Committee, 1983-1984, 1984-1985, 1985-1986.
- Chairperson, Faculty Affairs Committee, 1984-1985.
- Member, Advisory Board, Office of International Programs and Services, 1986, 1987.
- Member, Outstanding Scholar Award Committee, 1990.
- Member, College of Engineering Promotion and Tenure Committee, 1992, 1993, 2000-2005.
- Member, College of Business and Administration Promotion and Tenure, 1993.
- College Faculty Affairs committee, 2000-2005
- College PhD Committee, 2006 to Present
- Acting Chair, Mining and Mineral Resources Engineering, January 2008 to June 30, 2008

B. Professional Organizations (Selected)

- *Secretary-Treasurer, Illinois Mining Institute, 1997- Present*
- Honor Certificate from Society of Mining Engineers for enrolling new members, 1975.
- Chairman of Publications for the Rock Mechanics Unit, Committee of the Society of Mining Engineers (AIME), 1978-1979.
- Chairman, Program Planning, Rock Mechanics Unit Committee of the Society of Mining Engineers, 1979-1980.
- Chairman, Rock Mechanics Unit Committee of the Society of Mining Engineers, 1980-1982.
- Chairman, Publications, Geological Engineering Unit Committee of the Society of Mining Engineers, 1979-1980.
- Member, Publications Committee, Society of Mining Engineers, 1982.
- Chairman, Surface Mining Committee, SME-AIME, 1985.
- Chairman, Illinois Mining Institute Scholarship Committee, 1985, 1986, 1987
- Member, 1988, 1989.
- Chairman, SME-AIME Scholarship Committee, 1988-1989.
- Chair, Educational Issues Committee, 1990-1991.
- Member, Finance Committee, ABET Board of Directors, 1990-1991.
- Member, Executive Board, Illinois Mining Institute, 1990-1993, 1996-Present.
- Honorary Member, China Coal Society, 1995.
- Member, ABET Board of Directors
- Alternate Director, Technology Accreditation Commission

ADMINISTRATION RELATED

- Developed a new Department of Mining Engineering at Southern Illinois University to a unit with five continuing faculty members, an accredited BS program in mining engineering with good stable undergraduate enrollment, excellent laboratory facilities, over \$700,000 annually in external research funds, 4-6 post-doctoral researchers, 6-8 field research staff, and 15 graduate students. The Department had a very active 22-member industrial advisory board.
- Led the Department through four (4) ABET reviews and two Internal and External Reviews.
- Developed extensive mining industry, state and federal agency interactions for the department.
- Chairman, Ad-Hoc Committee to develop the Ph.D. program in Engineering Science in the College of Engineering at SIUC (1983-1985). Successfully launched the Ph.D. program in 1985.
- Team leader to develop recommendations and implementation plans for offering university curricula in mining engineering and geology with a coal emphasis for selected universities in Indonesia under a World Bank contract, 1988.
- Assisted in the development of an NSF Engineering Research Center proposal for the SIUC College of Engineering, 1988.
- Assisted in the development of a collaborative (West Virginia University, University of North Dakota, and SIUC) research program for the National Mine Land Reclamation. The Center was approved in February 1998.
- Developed an Industry/University/Government co-operative research program on “Coal Combustion Residues Management Program” with an annual funding of \$300K per year from the State of Illinois effective July 1, 1991. Appointed Program Director, July, 1991.
- Developed a 3 million dollar Industry/University/Government cooperative agreement for an interdisciplinary research program on “Management of Dry FGD By-Products in Underground Mines” with USDOE, 1993. The total cost of the program was about five million dollars. The program involved researchers from Mining Engineering, Civil Engineering, Geology, State Geological Survey, and subcontractors from all over the USA.
- Developed highly successful ongoing cooperative exchange agreements between Southern Illinois University, China University of Mining and Technology, Wroclaw Technical University (Poland), and Central Mining Research Institute (India), 1978-1998.
- Launched 2+2 program with Johan A. Logan College in 1994 for manpower needs of coal industry. Developed a similar program with the College of Dupage, Chicago to support manpower needs of limestone industry.
- Launched an innovative cooperative MS Program in Mining Engineering with China University of Mining and Technology and China Coal Research Institute effective fall 1998.
- Established “Peabody Longwall Ground Control Laboratory” in the E-wing of the Engineering Building with a \$75,000 donation from the company, 1997-1998.
- Actively participated in the “Engineering the Future” campaign for the College of Engineering to develop about 30% of the total campaign contributions (\$1.5 million), 1997-1998.

- Developed cooperative relations with the Illinois Department of Transportation, Illinois Ready-Mix Concrete Association, and the Illinois Association of Aggregate Producers, 1984-1998.
- Implemented, along with faculty and administration, a name change for the Department from “Mining Engineering” to “Mining and Mineral Resources Engineering”, 1997-1998.
- Established SIU-Joy Dust Control Laboratory with two wet scrubbers from Joy Mining Machinery.
- Conceived an idea in 2003 for an innovative BS degree program (involving distance learning techniques) in cooperation with industry.

Research Administration and Selected Achievements

- Directed over 3.5 million dollar research programs during the period of 1988-1994 as Director, Illinois Mining and Minerals Resources Research Institute and Technical Director, National Mine Land Reclamation Center- Midwestern Region.
- Successfully competed in the Mine Systems Design and Ground Control Center Research Program (federal government program) during 1985-1996 with a total funding of about \$875K.
- Actively participated in the Illinois Mine Subsidence Research Program during the period 1985-1992 attracting a total funding of about \$750K.
- Granted three six-week assignments by United Nations (1981, 1990, and 1993) to visit India and assist with Ground Control and Mine Subsidence Research.
- Four-week USAID/USDOE Assignment to assist India with fly ash utilization issues, March 1996.
- Two week USAID assignment to Poland to assist with Mine Health and Safety Issues, June 1997.
- Developed procedures for the design of partial extraction mining systems for weak floor conditions. All mines in the region currently use the procedures to seek permits (1980-present).
- Assisted the State with characterization of mine subsidence impacts due to longwall and room-and-pillar mining. Coal companies utilize data for mine planning and design (1985-present).
- Developed and demonstrated technologies and procedures for effective management of coal combustion by-products in the Midwest (1991-present).
- Successfully developed and demonstrated a paste backfill technology for underground mines using coal combustion by-products, 1995-1997.
- Developed and demonstrated an innovative waste coal slurry management process that has significant potential for enhancing profitability in Illinois mines, 1996-1997.
- Developed and demonstrated lightweight fly ash-based structural materials to replace wood in mines, 1996-2002.

- Demonstrated an innovative paste backfill technology for enhancing profitability of Illinois mines in cooperation with Freeman United Coal Company (1997-2001).
- Designed an intermodal shipping container in cooperation with Wilson Manufacturing Company of Kentucky for handling fly ash from a power plant to a consumer center. The container will be loaded and unloaded at about 100 tons/hour. The container was successfully demonstrated in March 1999.
- Developed a pilot scale facility in 1999 for manufacturing and marketing fly ash based artificial supports for use in underground mines. The facility operated until 2003 and marketed cribs.
- Developed a fly ash based utility pole in cooperation with Ashland Chemicals, and Trinity Industries with funds from Combustion Byproducts Recycling Consortium/ U.S. Department of Energy (2000-2003). This project is scheduled for commercialization in 2005 with support from Ashland Chemicals, and Trinity Industries in Paducah, KY.
- Developed an Advanced Mining Technologies research program for the State of Illinois in cooperation with mining industry in 2000. The State of Illinois has funded it for five years with funding of about \$250,000 per year. With matching support from coal companies, this program has a value of about \$750,000 per year.

Received an additional \$250,000 for research in this area in 2007.