

## RESUME



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3. *Educational/Professional Qualifications:*

- a) **PDF**, Dept of Mining and Mineral Engineering, SIU, Carbondale, IL, USA (2006)
- b) **Ph.D. in Engineering**, Indian Institute of Technology, Kharagpur, India (Feb, 2004)

*Dissertation Title:* “Experimental and Numerical Analysis of Behaviour of Model Pillars Trapped with Reinforced Fly Ash Composites”

- c) **Master of Science** in Mining Engineering, Southern Illinois University, Carbondale, IL, USA, Aug, 1990–June, 1992

*Thesis Title:* “An Analysis of the Design Practices for Partial Extraction Room and Pillar Mining in Springfield (No.5) Coal Seam”

- d) **Bachelor of Science** in Mining Engineering, Regional Engineering College (now NIT), Rourkela, India, 1981–1985
- e) **Intermediate Science**, Government College, Rourkela, India, 1978–80
- f) **High School Certificate**, R.E.C. Campus High School, Rourkela, India, 1975–78
- g) **Coal Mines Managers’ Certificate** of Competency, DGMS, India, 1987

4. *Courses offer:*

Theory

- Geo–Mechanics
- Material Handling System
- Rock Excavation Engineering
- Rock Slope Technology
- Rock Engineering
- Rock Mechanics–I & II
- Mine Development

Sessional/Practical

- Rock Mechanics Lab I and II (Undergraduate)
- Geotechnical Lab (Graduate)
- Software Lab (UG & PG)
- Rock Excavation Lab

5. *Professional Work Experience/Title Held:*

(i) *Himgir Rampur Colliery, CIL, Brajarajagar 768225, India (Trainee/J.M.E.)*

From October 1985 to July 1988 worked in various capacities looking after production, unit panel planning, mine safety, etc. Particularly responsible for developing the coal panels for production in Bord–and–Pillar working and depillaring with caving.

(ii) *Lajkura Opencast Project, CIL, Brajarajagar 768230, India (Under Manager)*

From August, 1988 to July, 1990: Worked in various capacities in one surface coal mine looking after the shovel–dumper operation, drills, dragline operation and haul road

maintenance including arrangement for firefighting in the coal seams. It was a mine developed with Russian (former USSR) collaboration. Also involved in planning of deployment of various production machineries at sites/locations/benches.

(iii) *Mahanadi Coalfields Limited, Production Dept., Burla, India 768 018 (U.M.)*

From September 1992 to June 1993: Was dealing with the short term and long term production planning, scheduling and monitoring of the coal division comprising of fifteen surface mines and ten underground coal mines. The responsibility also included preparing production plans as well as reporting the results.

(iv) *Mining Engg. Dept. UM–Rolla (GRA)/IIT, Kharagpur (QIP Research Scholar)*

From August 1999 to December 1999: Was a Graduate Research Assistant in the Mining Engg. Dept., UMR, MO, USA and working for Due Run Lead–Zinc Mine project. It involved studying the mine back–filling problems and critically reviewing the technical issues involved. Completed Ph.D. programme as a QIP Research Scholar, in the Mining Engg. Dept. at IIT, Kharagpur from January 2000 to June, 2003. Research involved developing a composite material with fly ash as a major constituent with sufficient strength properties. The developed composite material was reinforced with wire mesh and was used to entrap model core pillars to study the characteristics of the later. The behaviour of trapped core pillars changed with the strength of the reinforced composite material. One of the major finding of the research was that the composite material had potential to change the pre–and post–failure behaviour of the core that would enable to increase extraction percentage and induce designed cavability. Both numerical and experimental studies were carried out to investigate the model core pillar behaviour in trapped conditions. The investigation was funded by CSIR.

(v) Dept of Mining and Mineral Engineering, SIUC, IL, USA (short PDF)

Worked under Prof Y P Chugh for three months i.e. May 2006 to Aug 2006, on a fly ash application project. I experimented with fly ash and resin to develop light weight high strength material for possible support usage. I also developed a project proposal to use fly ash in haul road that was later funded by FAU–DST.

(vi) *Department of Mining Engineering, N.I.T., Rourkela 769008, (Lect./Asst./Assoc./Prof.)*

Since July, 1993 in the department. Offer/have offered courses on Material Handling System, Rock Mechanics–I & II, Geo–Mechanics, Rock Excavation Engineering, Rock Engineering, Rock Slope Technology, and Mine Development to the undergraduate and graduate students. Have planned, developed and established the Geo–mechanics and Advance Geo–mechanics Laboratories in addition to augmentation of the Ground Control laboratory through multiple grants as MHRD, TEQIP, DST–FIST, and R&D grants. Secured corporate funding for Rs 30 lacs from OMC Ltd to set up a Geotechnical Laboratory. The research interests are related to Surface Mine Haul Road Material, fly ash management, Rock Behavior, aspects of CBM–CO<sub>2</sub>, Room–and–Pillar Coal Mining, Slope stability, Blasting, and Fragmentation in addition to extending consultancy services to mining and allied operators on multiple technical challenges.

6. Thesis Supervision/ *Projects/Research Publications/PAwards/Professional Membership:*

(A) Research Students:

Completed = Ph.D.: 05      M.Tech(R): 04      M.Tech.: 09      B.Tech.: 30+

**Ph.D.** (*Student/Awarded Year/Funding/Dissertation Title*)

- (i) Ms. B Behera, (January, 2013) [MHRD & FAU-DST]  
*Experimental and Numerical investigation into behavior of fly ash based composite material in the subbase of Surface Coal Mine Haul Road*
- (ii) Mr. H K Naik (April, 2014) [FAU-DST]  
*Evaluation of Flow and In-place Strength Characteristics of Fly Ash Composite Materials*
- (iii) Mr. A K Goswami (August, 2018) [Institute]  
*An Evaluation of Multi-Point Stochastic approaches for Uncertainty Assessment in Ore Grade Estimation*
- (iv) Mr. H Kumar (December, 2018) [SERB]  
*Estimation and simulation of gas permeability as well as stress-strain behaviour of some Indian coal seams*
- (v) Ms. N Shukla (October, 2021/Institute)  
*Evaluation and Development of Digital Image Correlation approaches to predict coal pillar failure*
- (vi) Ms. S Choudhury (*Favorable Reports Received 2025*)  
*Development, characterization and evaluation of alternate coalmine haul road construction material*

**M.Tech. (Research)** (*Student/Awarded Year/Funding/Dissertation Title*)

- (i) Mr S. R. Mallik (January, 2013) [CSIR]  
*Development and Evaluation of Clinker Stabilized Fly Ash Based Composite Material for Haul Road Application*
- (ii) Mr A. Parida (December, 2016) [OMC]  
*Evaluation of Blasting Efficiency of Iron Ore mines*
- (iii) Ms Prithika Das (November, 2018)  
*Development and Characterization of Composites filled with Coal Mine Overburden Material and other Industrial Wastes*
- (iv) Ms Pratishruti Mallick (December, 2019) [SERB]  
*Gas Permeability of Coal Seams at in-situ conditions*

**Ongoing:**    *Ph.D.:* 07                      *M.Tech.:* 02                      *B.Tech.:* 01

(B) *Projects Involved:*

Sponsored **R&D** Projects [*As the Principal Investigator/Co-Principal Investigator*]

Name of the agency	Period (Mo/Year)		Research Topic
	Started	Completed	
CMPDIL	07/2024	06/2027	Design of geotechnical structures for extraction of coal seam at higher depth using continuous miner, [Co-PI] ₹ 3.03 Cr
SERB	01/2021	06/2024	Investigation, Development, and Optimisation of a Comprehensive Blast Design for the desired fragmentation incorporating rock mass parameters, rock quality, explosive parameters and initiation method; ₹ 39.42 L

SERB	02/2015	03/2019	Estimation and simulation of gas permeability as well as stress–strain behaviour of Indian coal seam for CBM production and CO <sub>2</sub> sequestration at in-situ conditions, ₹ 35.13 L
CSIR	06/2009	06/2013	Bearing capacity enhancement of sub-base of opencast coal mine haul road with stabilised fly ash-based composites and evaluation of the resilient modulus approach, ₹ 13.67 L
FAU-DST	12/2008	11/2010	Evaluation of Flow and In-place Strength Characteristics of Fly Ash Composite Material [Co-PI], ₹ 14.50 L
FAU-DST	12/2008	03/2012	Bulk use of fly ash composite material in the sub-base of surface coal mine haul road to reduce strain, ₹ 15.98 L
MHRD	03/2005	09/2008	Evaluation of Strength and flow characteristics of fly ash, ₹ 10.00 L
CSIR	04/2002	03/2004	Investigation into trapping core pillars with Fly ash composite material [Co-PI], ₹ 4.35 L
IMSR, IL, USA	08/1990	06/1992	Determination and Identification of Characteristics affecting the Pillar Design Practices for Partial Extraction Room and Pillar Mining in Illinois Coal Seams [Co-PI], US \$ 30 K

#### Major Industrial Consultancies [As the Principal Investigator]

Name of the agency	Period (Mo/Year)		Investigation Issue/Challenge
	Started	Completed	
MCL, Talcher	03/2007	06/2008	Physico-mechanical investigation of Borehole Cores for an underground coal mine development
FACOR, Orissa	10/2007	10/2009	Slope Stability Analysis of Waste Disposal Dump (Co-PI)
Shiva Cement	12/2012	02/2013	Blast Vibration Effects on nearby dwellings
FACOR	08/2011	12/2013	Slope Stability Analysis of Waste Disposal Dump
Jilling Mine	01/2014	01/2016	Evaluation of Blasting Effects and mitigating measures
Koira Mine	06/2014	06/2017	Technical Studies on Blast Vibration Effects
OMC Ltd.	02/2015	08/2016	Blast Vibration Study of Iron Ore Mine
BLS Co. Ltd	11/2015	12/2015	Investigation to predict Hardness of LST and Dolo Rocks
MB, Burla	10.2016	12/2016	Mechanical Properties of bed Rock
Tata Power, Darlipali	12/2016	06/2017	Compressibility Evaluation
SECL, Rayagarh	04/2017	03/2018	Slope Stability Analysis of Surface Coal Mine
OMC Ltd.	02/2017	12/2019	Blast Effect Evaluation and Measures for Two Mines
L&T Belpahar	10/2017	02/2018	Excavability Determination
JSW-Shiva Cement	12/2017	04/2018	Rippability Determination for Surface Miner Application
CMPDIL, Bhubaneswar	02/2018	07/2020	Physico-mechanical Characterisation of Borehole logs
IDCOL, Bhubaneswar	07/2018	Continuing	Slope Monitoring, Design and Blast Design of a Chromite Mine
Ambuja Cement Ltd., Raipur	08/2019	07/2020	Geo technical Investigation and Slope Design of Ambuja Cement Limestone Deposit
OMC Ltd., Bhubaneswar	01/2021	10/2021	Slope Stability Analysis of Two Mines

JSW Barbil	06/2022	05/2023	Slope Stability of Mines
Tata Steel Mining, Odisha	06/2022	05/2023	Scientific Studies on Blasting
CMPDIL, Bhubaneswar	09/2023	01/2024	Analytical Advise on Geophysical Properties of Borehole
Aditya Birla, Angul	11/2024	06/2025	Fly Ash Utilistion (CO-PI)
GIPCL, Gujrat	12/2024	06/2025	Slope Stability Evaluation and Safety of Lignite Mines

#### Sponsored Laboratory Developments:

Name of the agency	Period (Mo/Year)		Equipment/Infrastructure
	Started	Completed	
MHRD	08/2002	07/2005	Modernisation and Removal of Obsolence of Rock Mechanics and Ground Control Laboratory Facilities
FIST-DST	12/2002	10/2005	Rock Characterization Units for Rock Mechanics Lab
TEQIP-I&II	07/2006	03/2013	Establishment of Geo-Mechanics Laboratory with 100 T CCTM, 100 T ELE Triaxial Setup, Portable Coring, etc.
FIST-DST	12/2014	10/2018	Porosimeter PM33, 60 T Cyclic Loading Machine
OMC Ltd.	08/2022	09/2023	Biju Patnaik Geotechnical Laboratory

#### (c) Publications:

##### Journals:

- Ghosh, S., Behera, C., Panda, P.K. Mishra, M. K. and Behera, D., 2025, Estimation of Safe Ground Vibration Levels Due to Open Pit Bench Blasting in Hard Rock Mines: A Probabilistic Approach. *Mining, Metallurgy & Exploration* 42, pp 205–218. <https://doi.org/10.1007/s42461-024-01166-0>
- Ghosh, S., Behera, C., & Mishra, M. K. (2024). Rock mass classification for estimating the drilling rate in a surface mine using rock mass drillability index. *Petroleum Science and Technology*, 1–21. <https://doi.org/10.1080/10916466.2024.2347961>
- Ghosh, S., Behera, C. & Mishra, M.K. Prediction of blast-induced ground vibration using multivariate statistical analysis in the opencast chromite mines of the Indian State of Odisha. *Sādhanā* 49, 141 (2024). <https://doi.org/10.1007/s12046-024-02481-4>
- Choudhury S., and Mishra M.K., 2023, “Development and evaluation of coal mine waste materials for gainful utilization”, *Journal of Emerging Materials Research*, Volume 12 Issue 2, June, ICE Publ., pp 1 –14, <https://doi.org/10.1680/jemmr.20.00185>
- Goswami, A., M.K. Mishra, and D. Patra., 2022, ‘Evaluation of machine learning algorithms for grade estimation using GRNN & SVR”, *Journal of Engineering Research Experience*, IOP Publ., 4, 035037; <https://doi.org/10.1088/2631-8695/ac8912>
- Shukla, N., and Mishra, M.K., 2021, “Assessment of crack stress thresholds and development of a pre-failure indicator using Digital Image Correlation approach for coal specimen”, *Geomechanics and Geophysics for Geo-Energy and Geo-Resources*, Springer Publi, September, Volume. 7, 103; <https://doi.org/10.1007/s40948-021-00300-2>
- Harinandan Kumar, M K Mishra, S Mishra, Muralidhar Singh M., and D K Srivastava, 2021, “Determination of Methane Sorption Capacity using microstructural analysis in coal of Jharia Coalfield, India”, *Arabian Journal of Geoscience*, 14, 690, ONLINE, <https://doi.org/10.1007/s12517-021-07051-0>

- N. Shukla, and M.K Mishra, 2020, “Experimental Evaluation of Failure Characteristics of Coal Using 2D Digital Image Correlation Approach”, *Arabian Journal of Geoscience*, 13-1060, <https://doi.org/10.1007/s12517-020-06044-9>, Oct, pp 1-16
- Chandra, D., Vishal V., Debbarma, A., Banerjee, S., Pradhan, S P., and M. K. Mishra, 2020, “Role of composition and depth on pore attributes of Barakar Formation gas shales of Ib Valley, India using a combination of low pressure sorption and image analysis”, *Energy and Fuels*, No 34, Vol 7, pp 8085–8098; DOI: <https://dx.doi.org/10.1021/acs.energyfuels.0c00746>
- Harinandan Kumar, M K Mishra and S Mishra, 2019, “Experimental and Numerical Evaluation of CBM Potential in Jharia Coalfield India”, *Geomechanics and Geophysics for Geo-Energy and Geo-Resources*, Springer Publi, September, Volume 5, Issue 3, pp 289–314; <https://doi.org/10.1007/s40948-019-00114-3>
- Harinandan Kumar, M K Mishra and S Mishra, 2019, “Sorption capacity of Indian coal and its variation with Rank Parameters”, *Journal of Petroleum Exploration and Production Technology*, Springer Publi., <https://doi.org/10.1007/s13202-019-0621-1>, Feb, pp 1-10
- Harinandan Kumar, M. K. Mishra and S. Mishra, 2018, “Effect of Permeability and Geomechanical Properties on Coal Matrix During CBM Production – An Overview”, *Journal of Engineering Science and Technology Review*, EMaTTech Publi, 11 (2), pp 160 – 173, <https://doi.org/10.25103/jestr.112.22>
- Prithika Das, Alok Satapathy, and M.K. Mishra, 2018, “Development and Sliding Wear Response of Epoxy Composites Filled with Coal Mine Overburden Material”, *Materials Science and Engineering*, 338 (2018) 012032, <https://doi.org/10.1088/1757-899X/338/1/012032>
- Harinandan Kumar, M K Mishra and S Mishra, 2017, “3D Modelling of Coal Deformation under Fluid Pressure using COMSOL Multiphysics”, *Journal of Engineering Science and Technology Review*, EMaTTech Publi., 10 (6), pp 62 – 69; <https://doi.org/10.25103/jestr.106.09>
- Harinandan Kumar, M K Mishra and S Mishra, 2018, “Laboratory Investigation of Gas Permeability and its Impact on CBM Potential”, *Journal of Petroleum Exploration and Production Technology*, Springer Publi, December, Volume 8, Issue 4, pp 1183–1197, <https://doi.org/10.1007/s13202-017-0425-0>
- Goswami, A., M.K. Mishra, D. Patra., and S. Choudhury, 2018, ‘Incorporating spatial variability of lithological units into ore grade estimation of an Indian limestone deposit’, *Journal of Mines, Metals and Fuels*, Oct, ISSN, 0022-2755, pp 780-786
- Goswami, A., M.K. Mishra, and D. Patra., 2017, ‘Investigation of general regression neural network architecture for grade estimation of an Indian Iron Ore deposit’, *Arabian Journal of Geoscience*, Springer Publ., Volume 8, Issue 6, pp 3713-3726, <https://doi.org/10.1007/s12517-017-2868-5>
- Mallick S.R. and Mishra M.K., 2017, “Evaluation of Clinker Stabilized Fly Ash-Mine Overburden Mix as Sub-base Construction Material for Mine Haul Roads”, *Geotechnical and Geological Engineering*, August 2017, Volume 35, Issue 4, pp 1629–1644; <https://doi.org/10.1007/s10706-017-0198-8>
- Parida, A and M.K. Mishra, 2015, “Blast vibration analysis by different predictor approaches-a comparison”, *Procedia of Earth and Planetary Science*, Elsevier Publ., 11, pp 337-345; <https://doi.org/10.1016/j.proeps.2015.06.070>
- Kumar, H and Mishra, M. K., 2015, “Optimization and evaluation of fly ash composite properties for geotechnical application”, *Arabian Journal of Geoscience*, Springer Publ., Volume 8, Issue 6, pp 3713-3726; <https://doi.org/10.1007/s12517-014-1502-z>

- Harinandan Kumar, Susmita Mishra, M.K. Mishra, and A Parida, 2015, “*Petrographical Characteristics of Bituminous Coal from Jharia Coalfield, India: Its Implication on Coal Bed Methane Potentiality*”; *Proceedia of Earth and Planetary Science*, Elsevier Publ., <https://doi.org/10.1016/j.proeps.2015.06.006>
- Mallick S.R. and Mishra M.K., 2013, “California Bearing Ratio and Young’s Modulus behaviour of Clinker Stabilized Fly Ash-Mine Overburden Mixes”, *Recent Trends in Civil Engineering and Technology*, e-Journal, STM Publ. ISSN:2249 –8753, Vol 3, No 3, pp 1-10, [www.stmjournals.com](http://www.stmjournals.com)
- Mallick S.R., and Mishra M.K., 2013, “Strength Evaluation of Clinker Stabilized Fly Ash-Mine Overburden Composites as an Alternative Haul Road Construction Material”, *Journal of Emerging Materials Research*, Volume 2, Issue EMR 3, February, ICE Publ., online, pp 144 – 15, <https://doi.org/10.1680/em.r.12.00031>
- Mallick S.R., and Mishra M.K., 2013, “Geotechnical Characterization of Clinker Stabilized Fly Ash-Coal Mine Overburden Mixes for Sub-base of Mine Haul Road”, *Journal of Coal Combustion and Gasification Products*, 5, <https://doi.org/10.4177/CCGP-D-12-00011.1>, pp 49-56
- Naik, H.K., Mishra, M.K., and Rao, K.U.M., 2012, “Parametric evaluation of some Indian fly ashes for filling underground coal mine voids”, *Journal of Coal Combustion and Gasification Products*, Allen Press Publ., USA, , USA, Vol 4, pp 28-36, <https://doi.org/10.4177/CCGP-D-12-00002.1>
- Behera, B. and Mishra, M. K., 2012, “California Bearing Ratio and Brazilian Tensile Strength of Mine Overburden-Fly Ash-Lime Mixtures for Mine Haul Road Construction”, *Journal of Geotechnical and Geological Engineering*, Kluwer Academic Publication, <https://doi.org/10.1007/s10706-011-9479-9> , 30, pp 449–459
- Behera, B. and Mishra, M. K., 2012, “Strength assessment and composition of lime stabilized fly ash and mine overburden mixes upon curing”, *Journal of Solid Waste Technology and Management*, Widener Univ. Publication, PA, USA (Aug, Vol 38, Issue 3, pp 211-221), ISSN 1088-1697; <https://doi.org/10.5276/JSWTM.2012.211>
- Behera, B. and Mishra, M.K., 2012, “Strength Behaviour of Surface coal mine overburden-fly ash mixes stabilized with quick lime”, *International Journal of Mining, Reclamation and Management*, Taylor & Francis Publ., Volume 26, Issue 1, pp 38-54; <https://doi.org/10.1080/17480930.2011.552285>
- Naik, H.K., Mishra, M.K., and Rao, K.U.M., 2011, “Influence of Chemical Reagents on Rheological Properties of Fly Ash-Water Slurry at Varying Temperature Environment”, *Journal of Coal Combustion and Gasification Products*, Allen Press Publ., USA, CCGP-D-11-00015, pp 83-93; <https://doi.org/10.4177/CCGP-D-11-00015.1>
- Behera, B. and Mishra, M. K., 2011, ‘Effect of Lime on the California bearing Ratio behavior of Fly ash-mine over burden mixes’, Division of Civil and Environmental Engineering, Special Journal Issue, World Academy of Science, Engineering and Technology (WASET) Publication, 75, ISSN 2010-3778, March, pp 161-166; ISNI: 0000000091950263; <https://doi.org/10.5281/zenodo.1332302>
- Mishra, M.K. and Behera, B., 2010, “Laboratory investigation on behaviour of surface coal mine overburden stabilized with fly ash and lime”, *Journal of Mines, Metals and Fuels*, May, pp 129-133; ISSN: 0022 2755
- Naik, H.K., Mishra, M.K., and Rao, K.U.M., 2009, The Effect of Drag-Reducing Additives on the Rheological Properties of Fly Ash-Water Suspensions at Varying Temperature Environment, *Journal of Coal Combustion and Gasification Products*, Allen Press Publ., 25-31, <https://doi.org/10.4177/CCGP-D-09-00005.1>

- Naik, H.K., Mishra, M.K., Rao, K.U.M. and Deb. D., 2009, "Evaluation of the Role of a Cationic Surfactant on the Flow Characteristics of Fly Ash Slurry", *Journal of Hazardous Material*, Vol 169, Issue 1-3, Sept, Elsevier Publ., <https://doi.org/10.1016/j.jhazmat.2009.03.016>; pp 1334-1140
- Mishra, M.K. and Rao, K.U.M., 2008, "An experimental Investigation into trapping mine pillar with reinforced fly ash composites", *CIM Bulletin*, June/July, Vol. 3, No 4, Canada, pp 1-5; ISSN No: 1718-4169
- Mishra, S. and Mishra, M.K., 2007, "Dye Adsorption on modified fly ash", *Journal of Ecological Chemistry and Engineering*, Poland, EU, Vol. 14, No 8, pp 837-845, ISSN No. 1231-7098
- Mishra, M.K. and Rao, K.U.M., 2006, "Geotechnical Characterisation of Fly ash Composites for Backfilling Mine Voids", *Geotechnical and Geological Engineering*, October, Vol. 24 No 6, Kluwer Academic Publication, pp 1749-1765; <https://doi.org/10.1007/s10706-006-6805-8>
- Singh, V.K., Mishra, M.K., Iyer, R., Chugh, Y.P. and Phillips, M., June 1992, "An Analysis of the Roof Falls in Illinois Coal Seam", *Journal of Mining Research*, Wiley Eastern Ltd, pp 19-32; ISSN No: 0971-1899

### Conferences:

- Mohanty, A., Mishra, M. K., Ghosh, S., Sahoo, B. B., Behera, C., Rostami, J., and M. D. Sesay. 2024, "Geotechnical Implications of Large Shale Deposits on the Stability and Productivity of Iron Ore Mines: A Comparative Study." Paper presented at the 58th U.S. Rock Mechanics/Geomechanics Symposium, Golden, Colorado, USA, June; <https://doi.org/10.56952/ARMA-2024-1124>
- N. Shukla, and M.K Mishra, 2019, "An investigation of a digital image correlation for earth material", Annual international conference and exposition on Experimental and Applied Mechanics, SEM 2019, June 3-6, Reno, Nevada, USA
- S R. Mohanty, M. K. Mishra, S. Choudhury, and B. Behera, 2019, "Optimisation of Haul Road Dimension with Lime induced Overburden Composite Material", International Conference and Exhibition on Energy & Environment: Challenges & Opportunities, Vigyan Bhawan, CSIR, New Delhi Feb 20-22, pp 690-697
- N. Shukla, and M.K Mishra, 2019, "Strain Estimation of a Steel using Digital Image Correlation", Int. Conference on Electrical, Communication, Electronics, Instrumentation and Computing (ICECEIC-2019), IEEE Madras Section, Tamilnadu, Jan 30-31, Kanchipuram (SCOPUS)
- S R Mallick and M K Mishra, 2019, "Laboratory evaluation of clinker stabilized fly ash based composite material for coal mine haul roads", International Conference and Exhibition on Energy & Environment: Challenges & Opportunities, Vigyan Bhawan, CSIR, New Delhi Feb 20-22, Vol 1, pp 506-513
- N. Shukla, and M.K Mishra, 2018, "Digital Image Correlation Techniques for Experimental Strain Analysis: A Review", IEEE International Conference on Recent Innovations in Electrical, Electronics & Communication Engineering (ICRIEECE), 27-28 July, Bhubaneswar, ISBN: CFP18P98-PRT/978-1-5386-5994-6
- Hrushikesh Naik and Manoj Kumar Mishra, 2018, "Characterization of Indian fly ashes for mine stowing purposes", Proceeding of the 8<sup>th</sup> International Conference on Advances in Applied Science and Environmental Technology-ASET 2018, 155, Institute of Research Engineers and Doctors, USA, 23-24 June, Paris ISBN:978-1-63248-155-9; <https://DOI:10.15224/978-1-63248-155-9-33>

- Pratishruti Mallick, Manoj Ku. Mishra, and Sushmita Mishra, 2018, "Evaluation of Coal Properties for CO<sub>2</sub> Sequestration in Deep Seated Coal Seams", International Conf. on Emerging Trends in Material and Mechanical Engineering' (ICETMM – 2018), January 29-30, PU and MNIT, Jaipur, pp 74-82
- Prithika Das, Alok Satapathy, M.K. Mishra, 2018, "Processing, Mechanical Characterization and Sliding Wear Performance of Epoxy Composites filled with Fly Ash and Coal Mine Overburden Material", International Conf. on Emerging Trends in Material and Mechanical Engineering' (ICETMM – 2018), January 29-30, PU and MNIT, Jaipur, CD ver.
- Harinandan Kumar, M.K. Mishra, and S. Mishra, 2017, "Laboratory Investigation of Gas Permeability and its Impact on CBM Potential", Proceedings of the National Conference on Waste to Energy, Carbon Capture and Storage (NCWECCS – 2017), NIT Rourkela, 3-5 August 3-5, no. 4.7
- A. D. Goswami, M.K. Mishra, and D. Patra, 2017, Comparative Evaluation of Machine Learning algorithms for iron grade estimation, Int. Conf. on Deep Excavation, Energy Resources and Production (DEEP 2016), Jan 24-26, IIT Kharagpur
- A. D. Goswami, M.K. Mishra, and D. Patra, 2016, "Modelling Geological Uncertainties with multiple point geostatistics-Review " National conference on Sustainable Mining Practices (SMP-2016), NIT, Rourkela, Dec 2-3
- Goswami, A Das, M. K. Mishra and D. Patra, 2016, "Adapting Pattern Recognition Approach for Uncertainty Assessment in the Geologic Resource Estimation for Indian Iron Ore Mines", IEEE Sponsored International conference on Signal Processing, Communication, Power and Embedded System (SCOPE5), Oct 3-5, CUTM, Paralakhemundi <https://doi:10.1109/SCOPE5.2016.7955758>; pp 1816-1821
- Suryanshu Choudhury, M. K. Mishra, 2016, Adopting lean production system in mining industry for operational excellency, National Conference on Sustainable Mining Practices (SMP-2016), NIT Rourkela, Dec 2-3
- M. K. Mishra and S. Choudhury, 2017, "Experimental evaluation of fly ash based composite material for haul road application in Indian coal mines", National Seminar on Sustainable Development of Mining Industry to meet Energy Security, CMPDIL, Ranchi. Feb 11-12
- Mishra, M.K., H Kumar and A. Agarwal; 2016, "Evaluation of Intact Rock Failure Criteria of Coal Mine in Talcher Area", INDOROCK 2016, 6<sup>th</sup> Indian Rock Conference, IIT Mumbai, June 17-18; pp 726-740
- Harinandan Kumar, Susmita Mishra, and M.K. Mishra, 2015, "Experimental Evaluation of Geomechanical properties of Coal using Sonic Wave Velocity", International conf. on Advances in Agriculture, Biological and Environmental Sciences, (AABES- 2015), London, UK, July 22-23, DOI: 10.15242/IICBE.C0715073, [Best paper of the session]
- Harinandan Kumar, Susmita Mishra, M.K. Mishra, and A Parida, 2015, "*Petrographical Characteristics of Bituminous Coal from Jharia Coalfield, India: Its Implication on Coal Bed Methane Potentiality*"; Int. Conf. on "Global Challenges, Policy Framework & Sustainable Development for Mining of Mineral and Fossil Energy Resources" 17-18 April, 2015, NIT Surathkal
- A. Parida and M.K. Mishra, 2015, "Blast vibration analysis by different predictor approaches-a comparison", Elsevier Publ. on Int. Conf. on "Global Challenges, Policy Framework & Sustainable Development for Mining of Mineral and Fossil Energy Resources" 17-18 April, 2015, NIT Surathkal
- Mallick, S.R., Mishra, M.K. and Parida, K.T., 2012, "Performance Evaluation of Fly Ash Composite Material in Mine Haul Road", 13<sup>th</sup> International Symposium on Environmental

Management in Energy and Mineral Production (SWEMP-2012), New Delhi, Nov 28-30; ISBN: 9781629932798; pp 475-486

- Mallick, S.R. and Mishra, M.K., 2012, "Replacement of Conventional Material with FCMs in Sub-base of Opencast Mine Haul Road to reduce Strain- An Investigation", Geomintech Symposium on New Equipment, New Technology- Management and Safety in Mines and Mineral based industries, Bhubaneswar, May 11-12, pp 125-128
- Behera, B. and Mishra, M.K., 2012, "Microstructure and leaching characteristics of fly ash-mine overburden-lime mixtures", International Conference on Chemical, Civil and Environment Engineering (ICCEE-2012), PSRC, Dubai, March 24-25
- Mallick S.R., Mishra M.K., 2012, "Bearing Capacity & Modulus Behaviour of Clinker Stabilized Fly Ash-Mine Overburden Mixes for Haul Road Application" in proceedings, National Conference on Development of Coal and Mineral Resources- Economic, Technological and Environmental Issues, The Institution of Engineers (India), West Bengal State Centre, Feb 23-24
- Behera, B. and Mishra, M.K., 2011, "Some aspects of lime treated fly ash and mine overburden composite samples", 34th International Conference of Safety in Mines Research Institutes, IIT Kharagpur. New Delhi, Dec 7-10, ISBN 10: 9350590425
- Mallick S.R. and Mishra M.K., 2011, "Effects of Clinker on strength behavior of Fly ash- Mine Overburden Mixes" in proceedings, National Conference on fly ash, ITC Kakatiya, Hyderabad, Dec 5-7, pp. IV.7.1-IV.7.8.
- Behera, B. and Mishra, M.K., 2011, "The use of lime stabilized fly ash –overburden mixtures as Haul Road Construction Materials", International Conference on Technological Challenges and Management issues of Sustainability of Mining Industries, NIT Rourkela, Aug 4 -6, pp 117-124
- Mallick, S.R., and M.K. Mishra, 2011, "A review on Status of Coal ash in India- Present scenario and future prospects", International Conference on Technological Challenges and Management issues of Sustainability of Mining Industries, NIT Rourkela, Aug 4 -6, pp 349-359
- Naik, H.K., Mishra, M.K. and Rao, U.M., 2011, Evaluation of Flow Characteristics of Fly Ash Slurry at 40% Solid Concentration with and without an Additive, World of coal ash (WOCA) 2011" University of Kentucky, Lexington, USA, May 9-11, <http://www.flyash.info>, pp.1-15.
- Mishra, M.K., V.K. Singh and Chugh, Y.P., 2011, "Room-and-pillar design practices of Illinois coal (no 5) seam", International Conference on Underground Space Technology and 8<sup>th</sup> Asian Regional Conference of IAEG, Jan 17 – 19, Vol 7, pp 1-17
- Behera, B. and Mishra, M. K. (2010), "Mechanical properties of lime treated fly ash-overburden mixes in relation to their use in mine haul road construction", International Conference on Developments in Road Transportation, NIT Rourkela, Oct 21-23
- Mallick, S.R., M.K. Mishra and J. Dash, 2010, "Investigation into some of the index properties of core samples from MCL, Talcher", Conf. on Recent Advances in Fluid & Solid Mechanics, NIT Rourkela, Feb 27-28, pp135-138
- Behera, B. and Mishra, M. K., 2009, "Stabilization of Surface Coal Mine Overburden by Fly ash and lime", National Conference on Advances in Environmental Engineering (AEE-09), NIT, Rourkela, Nov 14-15, pp. 98-103
- H.K. Naik, M.K. Mishra and KUM Rao, 2009, "Rheological characteristics of fly ash slurry at varying temperature environment with and without an additive", Proceedings of the International conference on "World of coal ash (WOCA) 2009" University of Kentucky, Lexington, USA, pp.1-12; <http://www.flyash.info> pp 1-12

- Behera, B. and M.K. Mishra, 2009, "Utilisation of fly ash composite material for surface coal mine haul road stabilization", International Symposium on Rock Mechanics and Geo environment in Mining and Allied Industries, Feb 12- 14, IT BHU, Varanasi, India, pp 327-333
- Mishra, M. K. and K U M Rao, 2008, "Post-Yield Strength of as trapped Core-an experimental investigation", Indo-Korean Joint International Conference on Geoscience and Technology- Utilisation of Geospace as a Solution for Energy and Environment (GTEE-2008), *Edit.* D Deb et al, IIT-KGP and KIGAM, Kharagpur, Feb 12-14, pp 424-431
- Vishal Agarwal, H. B. Sahu and M. K. Mishra, 2008, "Limestone Mining in Orissa, Current Status and Future Challenges", Conference on Emerging Trends in Mining and Allied Industries, NIT, Rourkela, Feb 2-3, 2008, pp 112- 120
- Naik, H.K., M.K. Mishra, Srikrishna, V. and Nayak, P.K., 2007, 'Strength Development of Fly ash by lime and gypsum addition for its effective Utilisation – A laboratory investigation', Proceedings CHEMCON, IChE, Kolkotta, Dec 27-30, pp 402
- Naik. H.K., Mishra, M.K., and B. Behera, 2007, 'Laboratory Investigation and Characterisation of some coal combustion byproducts for their effective utilisation', Proceedings, 1<sup>st</sup> international Conference on Managing Social and Environmental consequences of coal mining in India, Nov 19-21, Delhi, pp 763-770
- Naik, H.K., M.K. Mishra, M.P.S. Das and V. Sahu, 2007, "Large Volume of Coal combustion byproduct utilization in mine void filling: A preliminary laboratory study", Indian Mining Congress on Emerging Trends in Mineral Industry, July 13-15, MPUAT, Udaipur, pp 257-264
- M.K. Mishra, S. Subham, D. Sunil, and R. Sirdeshpande, 2005, Stabilization of fly ash dump through lime addition", National Seminar on Mining and Mineral Industry- The potential power house for economic growth, MEAI, Bhubaneswar, Oct 21-22, pp 11-13
- Mishra, M.K., Mohaptra, D.P and Mishra, S., 2004, "Fly ash –a potential tool for solid waste management", CHEMCON 2004, Mumbai, Dec 27-30, Env. Engg. Session, pp 1-4
- Mishra, M.K. and Rao, U.M. Karanam, 2004, "Potential of Fly ash composites to fill mine voids", International Seminar on Technology update in Mining & Mineral Industries, MEAI, Oct 16-17, Bangalore, India
- Mishra, M.K. and Rao, U.M. Karanam, 2004, "Large scale management of flyash through lime-gypsum stabilization", National Seminar on Emerging Technology for Sustainable Development in Chemical & Allied Industries", October 2<sup>nd</sup> –3<sup>rd</sup>, NIT Rourkela,
- Mishra, M.K. and Rao, K.U.M., 2004, "Change of Behaviour of model core pillar with Reinforced Fly ash Composite Material", TAMSEM, I.I.T. Kharagpur, Feb 5-7, pp 127-136
- Mishra, M.K., Rao, U.M. Karanam and Dutta, S., 2003, "Experimental Investigations on the Methods of Reinforcing Jointed Rocks", 12<sup>th</sup> Pan-American Conference on Soil Mechanics and Geotechnical Engineering and the 39<sup>th</sup> U.S. Rock Mechanics Symposium, Soil and Rock America-2003, June 22-25, MIT, USA, pp 2179-2186
- Mishra, M.K. and Rao, U.M. Karanam, 2003, "Experimental Investigations on the use of Fly Ash to Reinforce Jointed Mine Pillar", 3<sup>rd</sup> International Conference on Fly Ash Utilisation & Disposal & Fly ash Expo 2003, 19-21 February, New Delhi, India, Vol 2, pp VI 59-68
- Mishra, M.K. and Rao, K.U.M., 2003, "Brittle to Ductile Transition with reinforced Fly ash composite- An Experimental Investigation", National Seminar on Recent Trends in Mine Mechanisation-2003, MEAI, Puri, 21-22 Nov., pp 84-89

- Mishra, M.K. and Rao, K.U.M., 2001, "Mine Pillar Stability with Fiber Reinforced Composite Fill Material – A Preliminary Approach", National Seminar on 'Environment and Waste Management in Mining and Allied Industries', REC, Rourkela, Feb 23-24; pp 137-140
- Singh, V.K., Mishra, M.K., Yang, G. and Chugh, Y.P., 1992, "Roof Fall Analysis of Illinois Coal Seams", 4<sup>th</sup> Conference on Ground Control for Midwestern U.S. Coal Mines, Eds. Y.P. Chugh and G. Basasely, Nov 2-4, Marion, IL, USA, pp 103-116

#### **Book/Book Chapter/Patent:**

- Mallick, S.R. and M K Mishra, 2015, "Fly Ash- An Alternative Mine Haul Road Construction Material", LAP Lambert Academic Publishing, ISBN-13: 978-3659693809, pp 120
- Nutan Shukla and M K Mishra, 2019, "An Investigation of Digital Image Correlation for Earth Materials" Advancements in Optical Methods & Digital Image Correlation in Experimental Mechanics, Chapter 6, Volume 3, Proceedings of the Society for Experimental Mechanics, Series Editor: Kristin B. Zimmerman, Ph.D., Society for Experimental Mechanics, Inc., Bethel, CT, USA, [https://doi.org/10.1007/978-3-030-30009-8\\_6](https://doi.org/10.1007/978-3-030-30009-8_6), pp 40-45

**Patent:** "A composite material with high load bearing capacity prepared from coalmine parting and fly ash" (submitted. Patent application No.202331070306; Date: 16-10-2023) with S. Choudhury and K. U. Rao [Published]

#### **(D) Awards:**

- Graduate Teaching Assistant, Mining Engg. Dept., SIUC, IL, Aug 1991– Dec 1991
- Graduate Research Assistant, Mining Eng. Dept., SIU, IL, Aug 1990–May 1992
- Graduate Research Assistant, Mining Eng. Dept., UMR, MO, Aug 1999–Dec 1999
- QIP Research Scholar, Mining Engg. Department, IIT, Kharagpur (2000–2002)
- TEQIP Training, Dept of M & MR Engg., SIUC, IL, USA, May 2006–May 2006
- Short PDF, Dept of M & MR Engg., SIUC, IL, USA, June 2006–Aug 2006
- Marquis Who's Who in Science and Engineering, 2007, 2008, 2017, 2020
- Albert Nelson Marquis Lifetime Achievement Award Winner, 2018, 2019

**(E) Professional Membership** – MEAI, ISTE, FIE (I), MGMI, MICHE(I), 4MSI

**(F) Institutional Assignment:** President, FTBI–NIT Rourkela (1<sup>st</sup> July, 2022 – continuing)  
 HOD, Mining Engg. Dept., July 2015–June 17  
 Asst. Warden: D. Ambani Hall of Residence (2005–07)  
 Member, Write-off and Disposal Committee (2007–10)  
 Member, Committee for Best Project Award (2015–17)  
 Chair, TCS–100 Best Selection Committee (2015–16)  
 Center Suptd., NIT Rourkela, AIEEE– 2015

#### **7. Other Professional Activities:**

- **Reviewer, Project Proposals**, CRG–SERB (Oct 2022—continuing)
- **Examiner, OPSC**, Mining Officer, 2025
- **Expert Member, Prime Minister Early Career Research Grant**, Division of Earth and Atmospheric Science, ANRF, Govt of India, 2025
- **Expert Member**, Consultative Meeting on R&D areas for Methane Monitoring and Mitigation across Sectors, DST, 2024

- **Member**, Technical Evaluation Committee, Servo Controlled Rock Testing Unit, IPE, Visakhapatnam, 2021–22
- **Member, Peer Review Committee, DST**, Center of Excellence in CCUS, 2021–24
- **Member, Expert Committee, DST**, Panel for CCUS projects supported under MI-IC-3, 2021
- **Member, Expert Panel, DST**, Accelerating CCUS Technologies, Pre-Proposals Review, ACT-3, 2021–24
- **Member, Scientific Committee**, 3<sup>rd</sup> Conference of the Arabian Journal of Geosciences (CAJG), held online, 2–5 November, 2020
- **Review Committee Member**, Odisha State Govt Committee for Stack Height, Mineral Value Determination, 2020–21
- **Member**, Mining Engineering–Board of Academic, Indian Institute of Engineering Science and Technology, Shibpur, West Bengal, Jan 2020–22
- **Member**, Mining Engineering, Board of Studies, Biju Patnaik University of Technology, Rourkela, April 2019–21
- **Member, Scientific Committee**, 2<sup>nd</sup> Conference of the Arabian Journal of Geosciences (CAJG), Sousse, Tunisia, 25–28 November 2019
- **Member, Faculty Selection Process**, IITs: Mumbai, Kharagpur and BHU; 2018–19
- **Chairman**, Complete Curricula Revision Committee, Mining Engineering Dept., 2017, NIT Rourkela
- **Vice Chairman**, Executive Body, Indian Institute of Chemical Engineering, Rourkela Regional Chapter, 2017–19
- **Member**, Organising Committee, Students’ Chemical Engineering Congress–2017, IChE, Oct 7–8, NIT Rourkela
- **Convener**, Short Term Course on “Rock Mechanics with Ground Control Applications” in association with Dept. of MMRE, SIUC, IL, USA, Jan 17–19, 2017
- **Chairman**, National Conference on Sustainable Mining Practices, Dept. of Mining Engg., NIT Rourkela, December 2–3, 2016
- **Member**, Technical Committee, INDOROCK 2016, June 17–18, IIT Mumbai
- **Project Proposal Review Member**, CSIR–Extramural Grant, 2015
- **Member**, Faculty Selection, Odisha Public Service Commission, June 2015 & 2018
- **Resource Person**, Short Term Course on “Environmental Management in Iron and Manganese Mines”, Dept. of Mining Engg, NIT Rourkela, Jan 29–31, 2013
- **Chair, Session No 24–** Technologies to Enhance Environmental Performance, 13<sup>th</sup> International Symposium on Environmental Management in Energy and Mineral Production (SWEMP–2012), New Delhi, Nov 28–30

- **Theses Examiner**, Ph.D. Dissertation and M.Tech. Thesis: IITs–Mumbai, Kharagpur, & ISM–Dhanbad
- **Invited Speaker**, Consultation on Fly Ash Utilisation, DST, GOI, Delhi, July 21–22, 2011
- **Course Content Reviewer**, 2013, Rock Mechanics, Pedagogy Project, National mission for Project on Education through ICT, MHRD, Govt. of India through, IIT, Kharagpur
- **Course Co–coordinator**, Short Term Course on “Geo–environmental Issues in Mines and Allied Industries”, Dept of Mining Engg., Aug 23–26, 2010
- **Course Co–coordinator**, Short Term Course on “Strata Control Technology and Instrumentation in Coal Mines”, Dept. of Mining Engg., Nov 19–21, 2009
- **Journal Reviewer**: Journal of Geological and Geotechnical Engg., SME Mining Engineering Magazine, Natural Hazards, Waste Management, Geo–mechanics and Engineering, Asia–Pacific Journal of Chemical Engineering, Songklanakarin Journal of Science and Technology, Arabian Journal of Geoscience, Coal Combustion and Gasification Products, Sadhana, Int. Journal of Mining Science and Technology, Int. Journal of Earth Sciences & Engineering, SME Journal of MM&E, Road Materials and Pavement Design, Int. Journal of Rock Mechanics and Mining Sciences, Scientific Reports (Nature), etc.
- **Member**, Organising Committee, Conf. on Recent Applications on Solid and Fluid Mechanics, Dept. of Civil Engg., Feb 27–28, 2010
- **Convener and Editor**, “Emerging Trends in Mining and Allied Industries”, Feb 2–3, 2008, NIT Rourkela
- **Member**, Organising committee, Industry Institute Interaction, Nov 29 – Dec 01, 2006, TEQIP, NIT Rourkela
- **Member**, Organizing Committee, National Conference on Technological Advancement and Environmental Challenges in Mining and allied Industries in 21st Century, Feb 5–6, 2005, NIT Rourkela
- **Member**, Organizing Committee, National Seminar on Emerging Technology for Sustainable Development in Chemical and Allied Industries 2004, NIT Rourkela, Oct 2–3, 2004
- Assisted the–then HOD in **FIST–2002** application preparation (Sanction: Rs. 15 lakhs)

#### 8. *Short Term Courses Attended/Computational Skill:*

- Management Capacity Enhancement programme for Administrators, IIM Lucknow Noida Campus, 23–27 Sept, 2014
- Certificate Programme on Numerical Techniques for Slope Stability Analysis, Rocscience Inc. Canada and Univ. of Toronto at Delhi, Nov 27–28, 2014
- Advanced Road Infrastructure Planning and Development, Department of Civil Engineering, July 17–23, 2002, IIT Kharagpur (One week)
- Advanced IT Application to Civil Engineering, Dec. 4 –14, 2000, Dept. of Civil Engineering, IIT, Kharagpur (Two weeks)

- Geo-statistics and Applications, Sept. 25 – 29, 2000, Department of Mining Engineering, I.I.T., Kharagpur, India (One week)
- Application of FEM in Engineering, May 30 – June 10, 1994, Dept. of Civil Engineering, I.I.T., Kharagpur, India (Two weeks)
- Institutional Planning and Management, Feb 10–15, 1997, Dept. of Civil Engineering, CET, OUAT, Bhubaneswar, India (One week)
- Industry–Institute Partnership, July 28 to Aug 02, 1997; Dept. of Chemical Engineering, R.E.C., Rourkela, India (One week)
- Application software: ANSYS, FLAC, GALENA, Slide, Rocdata, etc.

#### 9. *Laboratories Developed:*

- Modernisation and Removal of Obsolence of *Rock Mechanics and Ground Control* Laboratory Facilities – funded by MHRD, 08/2002 – 07/2005 (Rs. 6.00 lakhs)
- Planned, procured, developed and established *Geo-mechanics and Adv. Geomechanics Laboratories* with CBR Unit, Oven, Rock Characterisation Units, Rheometer, 100T CCTM with 250°C cell, ELE Triaxial Setup, Soil Triaxial Setup, 200°C Constant Load, Soil Shear Unit, GCTS NDD Unit, Point Load Tester, Slake Durability Machine, Cyclic Rock Loading Unit, Portable Coring Unit, Permeability Apparatus, Mercury Porosimeter, state of art codes GALENA, Rocscience suit, etc. (*Funding:* Institute Special Grant, TEQIP, FIST, R&D projects; Rs. 180.00 Lakhs)
- Initiated and Fund Sourced for Biju Patnaik Geotechnical Lab. (Sponsor: OMC Ltd., Rs 30 lakhs; Budget: ₹ 36.00 Lakhs)

#### 10. *Other Activities/Social Involvement.*

- Founding Secretary, Bharat Vikash Parishad (Ispat Branch), Odisha, 2008–10
- Treasurer, NITRAA, 2010–12 and NITRAA Golden Jubilee Event–2010
- Co–Treasurer, NITRAA, 2012–14
- Member, Board of Trustee, Birsa Munda Vidyapitha, Jagda, Rourkela
- Trustee Member, NITR Campus Worship Committee, 2008–12

#### 11. *References with Addresses:*

- **Prof. K Uma Rao**, Director, National Institute of Technology, Rourkela 769 008, India  
Email: [director@nitrkl.ac.in](mailto:director@nitrkl.ac.in)
- **Dr. Y.P. Chugh**, Emeritus Prof., Dept. of Mining and Mineral Resources Engineering, SIUC, Carbondale, IL 62901, USA; Email: ypchugh1@yahoo.com