

# Contributors to this issue

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**Dr. P. K. Singh**

Dr. P.K. Singh is the Director, CSIR-Central Institute of Mining and Fuel Research, Dhanbad. Dr Singh has studied from pre-University to post graduate levels at Banaras Hindu University, Varanasi, India and earned his Doctor of Engineering Degree from the Technical University, Clausthal, Germany. Dr. Singh also worked at Lossande Institute of Geosciences, University of Toronto, Canada as post-Doctoral Fellow. Dr. Singh has made notable contributions in explosives science and blasting technologies to solve practical problems in the mining industry encompassing the fields of optimal use of explosives energy in rock fragmentation, explosives energy partitioning, blast vibrations, wall-control, fragmentation control, blast design in mines and tunnels, pre-split blast design, cast blast designs in coal mining operations besides correlating structural damage due to blast vibrations.

He has authored a blast damage index for underground openings in close vicinity of opencast blasting operations and the Mine Regulatory Authority in India (DGMS) issued a mandatory guideline (circular No. 06; dated 28.05.2007). Dr. Singh has authored additionally 4 guidelines which have been internationally accepted. He has published 114 papers in refereed international and national journals/symposia and has also authored 3 books. Dr. Singh has authored 274 technical reports sponsored by different organizations and 9 S&T reports funded by Ministry of Coal, Government of India.



**Dr. M. P. Roy**

Dr. M.P Roy is Principal Scientist, CSIR-CIMFR, Dhanbad. He did his Ph. D. and post graduation from Indian School of Mines, Dhanbad and graduated from Bihar Institute of Technology, Sindri, India. He has made notable contributions in blasting science and technology to solve practical problems in the mining industry encompassing the fields of blast vibration and associated correlation with structural damage, wall control, rock fragmentation, blast design in mines and tunnels, cast blast designs in coal mining operations, slot/raise and ring design in underground metal mine. He has authored 235 technical reports sponsored by different organizations and 6 S&T reports funded by Ministry of Coal, Government of India. He

has published 68 scientific papers in international and national journals and conferences.



**Dr. Amar Prakash**

Dr. Amar Prakash graduated in Mining Engineering from the Bangalore University in 1994. He stood first class first in all the four years and received award from MGMI (Bangalore Branch) for the same. He served Hutti Gold Mines, Hutti, as Engineer (Survey) for seven years from January, 1995 till December, 2001. He obtained Surveyor's certificate from the Directorate General of Mines Safety (DGMS) in 1995. He qualified Ist Class Mine Manager's examination from DGMS in 2001. He joined Central Institute of Mining & Fuel Research (CIMFR), Dhanbad as Scientist-B in Mine Subsidence and Surveying department in January, 2002 and presently working as Senior Scientist. He did Master of Technology in Environmental Science & Engineering from Indian School of Mines (ISM), Dhanbad in 2007 securing first class first in all the semesters. He has been granted certificate of recognition as a qualified person (RQP) to prepare Mining Plans under Rule 22C of Mineral Concession Rules (MCR), 1960, by Indian Bureau of Mines. He obtained Doctorate on cuttability of surface miners in Indian geo-mining conditions from ISM. He has published 63 papers in various national and international conferences and journals.



**Dr. V.M.S.R. Murthy**

Dr. V.M.S.R. Murthy graduated in Mining Engineering from the Visvesvaraya Regional College of Engineering (presently VNIT) in 1986 and also obtained his Master of Technology in Mine Planning and Design from Indian School of Mines, Dhanbad in 1988 with distinction. Later joined Central Mining Research Institute, Dhanbad, as a Scientist. He obtained Doctorate in the field of Mechanized Roadway Development from ISM. Dr. Murthy joined Indian School of Mines, Dhanbad in 1997 and elevated to Professor in 2008. His teaching specializations are mine development and construction, mine supports, rock excavation engineering, tunnelling and underground space technology. His research interests are drilling and blasting, rock characterization and testing for selecting various excavation machinery. Dr. Murthy is also involved in underwater rock drilling and blasting for deepening and

widening of seaports and intake channels. He completed an Indo-Italy DST funded project on rock cutting, 4 R&D projects, 131 research papers, 118 technical reports including 18 EDPs and guided 6 students for their Ph.D. He visited the USA (New Orleans), Europe (Austria, Torino), Myanmar, Canada (Toronto) for technical paper presentations, discussions and field work in the field of rock drilling and blasting and mechanical cutting of rocks. He holds the position of Dean (International Relations and Alumni Affairs) since 2012.



**Dr. A. S. Venkatesh**

Dr. A.S. Venkatesh is currently working as a Professor in the Department of Applied Geology, Indian School of Mines, Dhanbad besides looking after duties as Professor-in-Charge, Training and Placement at ISM. Prof Venkatesh did his masters in Geology from Andhra University, Ph D from National Geophysical Research Institute, Hyderabad and AU and did post-doctoral research from ISM. His specializations include ore geology, mining geology and environmental geology and published several peer reviewed papers in national and international journals on metallogeny, exploration/mining/environmental geology, conducted several industrial consultancy projects, and handled national and international R& D projects and guided 7 Ph.Ds.



**Dr. K. B. Singh**

Dr. K.B. Singh did his S. Sc. in Geology with 1st class from Banaras Hindu University in 1980. He did his Ph.D. in Geology-Mining Engineering in 1991 from the Institute of Technology from Banaras Hindu University. His main areas of research had been rock mechanics, ground control and subsidence: monitoring, prediction, impact and control measures. He is NABET coordinator for environmental impact assessment projects. He has published more than 90 research papers in different national and international journals, seminars, symposia etc. He is also acting as a referee for publication at different national and international journals. He has also received National Geo-Science award from the Ministry of Mines, Government of India in 2010. Presently he is working as Head of Research Group of Natural Resources and Environment Management at CSIR- CIMFR, Dhanbad.



**Dr. Angad Kushwaha**

Dr. Angad Kushwaha is presently working as a Chief Scientist & Head in “Mine Design & Simulation Section” under “Mining Methods & Design Simulation Research Group” in CSIR-Central Institute of Mining & Fuel Research, Dhanbad. He completed his post graduation in Physics in 1983 from the Banaras Hindu University (BHU), Varanasi. He did his PhD in Mining Engineering from the

Mining Department, Institute of Technology, BHU, Varanasi in 1992. His R&D specialization is in the field of rock mechanics, underground mining methods, mine design simulation and ground control for coal and non-coal mines. He has completed 4 Grant-in-Aid Projects sponsored by The Ministry of Coal as Project Leader, Coordinator and Member and more than 200 industry sponsored consultancy projects as Project Leader & Coordinator. Dr. Kushwaha has more than 100 research papers to his credit published in various national and international journals, seminars, symposia and workshops volumes besides a number of patents. He is life member of several professional societies.



**Mr. Rana Bhattacharjee**

Mr. Rana Bhattacharjee is presently working as a Senior Technical Officer at CSIR-CIMFR Dhanbad in “Mine Design & Simulation Section” under “Mining Methods & Design Simulation Research Group”. He has two patents and sixteen technical papers to his credit published in various national and international journals and conference proceedings. He is actively involved in a number of R&D projects. His area of interests are rock mechanics, ground control, underground mining methods and numerical modelling.



**Mr. Subhashish Tewari**

Mr. Subhashish Tewari is currently Senior Technical Officer in “Mine Design & Simulation Section” under “Mining Methods & Design Simulation Research Group” at CSIR-CIMFR Dhanbad. He has ten patents and fifteen publications to his credit in various national and international journals and seminar volumes. He is actively involved in a number of R&D projects. His area of interests are in the field of rock mechanics, ground control, mining methods and numerical modelling.



**Dr. Prabhat Kumar Mandal**

Dr. Prabhat Kumar Mandal is presently working as a Senior Principal Scientist in Mine Design & Simulation Section under Mining Methods & Design Simulation Research Group, CSIR-Central Institute of Mining & Fuel Research, Dhanbad. He graduated in Mining Engineering in 1993 from Bengal Engineering College, Shibpur (presently, IIST, Shibpur). He did his M. Tech. from Indian Institute of Technology, Kharagpur. He did his PhD in Engineering from Bengal Engineering and Science University (presently, IIST), Shibpur. His R&D specialisation is in the field of rock mechanics, underground mining methods, mine design simulation and ground control. He is associated with design of a number of advanced mechanised mining methods, assessing suitability and modification of existing mining

methods. He has more than 100 research papers to his credit published in various national and international journals, seminars, symposia and workshops volumes besides a number of patents including co-authored one book. He is life member of several professional societies and recipient of several awards.



**Mr. Abhay Kumar Soni**

Born in 1963 at Chhindwada (M.P.), Dr. A.K. Soni obtained B.E. degree in “Mining Engineering” from Government Engineering College, Raipur in 1983 and M.S. (S&T) from BITS, Pilani in 1991. He did Ph.D. in “Environment Science and Engineering” from Indian School of Mines, Dhanbad in 1998. He has more than 100 technical publications to his credit on environmental related topics in national and international journals, monographs, conference proceedings, workshops etc. He has authored technical papers in Hindi as well. Dr Soni has working experience of 30 years in field, teaching and research. His current research area of interest is “Geo-hydrological problems related to mines”. He is the member of important committees and responsible for number of noted professional assignments besides his active association with technical and professional organizations and societies viz. MEAI, I.E. (India), IMWA and AGID. Dr Soni is currently Chief Scientist at CSIR-Central Institute of Mining and Fuel Research, (CIMFR) Nagpur and holding the responsibility of Scientist-in-Charge and Head since 2009.



**Ajit Kumar Nath**

Presently working as General Manager (Mines), Bhilai Steel Plant. Mr. Ajit Kumar Nath is a Mining Engineer by profession. He did his B. E. in Mining Engineering from Govt. Engg. College, Raipur. He has more than 30 years of working experience at various levels in iron ore mines of RMD and Bhilai Steel Plant belonging to Steel Authority of India Ltd. He is a good leader and able communicator, has been awarded by Jawahar award in 2011. He has attended a number of national and international seminars and training courses in India and abroad (Australia, Poland and Austria).



**Dr. Arun Kr. Singh**

Dr. Arun Kumar Singh is a mining graduate from BIT, Sindri. He did M. Tech from IIT Kharagpur and Ph.D. from IEST, Shibpur. He is Principal Scientist in Thick Seam Mining and Strata Mechanics Department, CSIR-CIMFR. His current area of research is application of basic principles of rock mechanics for improvement in practical mining conditions.



**Mr. Sahendra Ram**

Mr. Sahendra Ram is a Senior Technical Officer in Thick Seam Mining and Strata Mechanics Department, CSIR-CIMFR and is conducting R&D for the design of roof-bolt based breaker-line design for CM based mechanized depillaring of the existing rectangular/square pillars of Indian coalfields. He is a mining graduate from BIT, Sindri.



**Dr. Rajendra Singh**

Dr. Rajendra Singh is Chief Scientist and Head of the Strata Mechanics Section, CSIR-CIMFR. He did Ph. D. from the University College London (1993-1996) and worked at Camborne School of Mines as Honorary University Fellow (2010-2011) of University of Exeter, UK. He initiated and successfully led some major R&D projects in frontier areas of rock mechanics for underground mining of difficult coal seams.



**Mr. Ashok Kumar**

Mr. Ashok Kumar was a Trainee Scientist at CSIR-CIMFR till November, 2015 and is currently working as a Scientist at NIRM. He graduated in Mining Engineering (2009-2013) from IIT (BHU) and did M. Tech. from AcSIR (CIMFR), Dhanbad.



**Mr. Ranjit K Paswan**

Mr. Ranjit K. Paswan did his post-graduation at Banaras Hindu University, Varanasi. He is pursuing his Ph.D. at Indian School of Mines, Dhanbad. Presently, he is working as a Senior Project Fellow and associated with Blasting Research Group of Rock Excavation Engineering Division of CSIR- Central Institute of Mining and Fuel Research, Dhanbad.



**Mohammad Sarim**

Mohammad Sarim did his graduation from Aligarh Muslim University, Aligarh and earned his post-graduation from Banaras Hindu University, Varanasi. Presently, he is working as a Project Fellow associated with Blasting Research Group, Rock Excavation Engineering Division, CSIR- Central Institute of Mining and Fuel Research, Dhanbad.

**Mr. Suraj Kumar**

Mr. Suraj Kumar has completed his B.Tech in Mining Engineering from Birsa Institute of Technology, Sindri, Jharkhand in 2014 and joined CSIR- Central Institute of Mining



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**Mr. Rakesh Ranjan Jha**



Mr. Rakesh Ranjan Jha completed his M.Sc. in Geology from Patna University, Patna in 2014 and joined CSIR-Central Institute of Mining Institute, Dhanbad as Project Fellow. He worked there in various fields of blasting at opencast and underground mining operations for more than a year.

**Mr. Sujan Saha**



Mr. Sujan Saha is Sr. Scientist at Gasification Division in CSIR-Central Institute of Mining & Fuel Research, Dhanbad, India. He has experience of more than 12 years in the area of surface characterization of coal, gasification of coal and biomass, gasification reactivity and kinetics using TGA. He has research interest in clean coal energy, coal and biomass gasification, surface characterization of coal and petcoke gasification. He has several publications in various national and international journals.

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Mr. Gajanan Sahu is Technical Officer at Gasification Division at CSIR-Central Institute of Mining & Fuel Research, Dhanbad, India. He has experience of more than 10 years in the area of surface characterization of coal, coal gasification, gasification reactivity, co-gasification of coal and biomass and biodiesel production using heterogeneous catalysis. He has research interest in coal and biomass gasification, gasification reactivity study using TGA system. He has several publications in various national and international journals.

**Mr. Sudipta Datta**



Mr. Sudipta Datta is a Principal Scientist at Gasification Division in CSIR-Central Institute of Mining & Fuel Research, Dhanbad, India. He has experience of more than 16 years in the area of coal gasification, petroleum heavy residue upgradation, co-gasification of coal and biomass, fluidized bed gasification and reactivity of gasification. He has research interest in clean coal energy, coal and biomass gasification, liquefaction. He has several publications in various national and international journals.



**Mr. Prakash D Chavan**

Mr. Prakash D Chavan is a Principal Scientist at Gasification Division in CSIR-Central Institute of Mining & Fuel Research, Dhanbad, India. He has experience of more than 12 years in the area of coal, biomass and co-gasification of coal and biomass, development of fluidized bed gasifier and coal to liquid direct and indirect route. He has research interest in clean coal energy, coal and biomass gasification, liquefaction. He has several publications in various reputed national and international journals.

**Mr. Ankit Kumar**



Mr. Ankit Kumar is a Project Fellow at Gasification Division in CSIR-Central Institute of Mining & Fuel Research, Dhanbad, India. He has research experience in the area of coal and biomass gasification with special focus to fluidized bed gasification.

**Ms. Neelam Kumari**



Ms. Neelam Kumari is a Project fellow at Gasification Division in CSIR-Central Institute of Mining & Fuel Research, Dhanbad, India. She has experience of more than 2 years in the area of coal and biomass gasification, surface characterization of coal, co-gasification of coal and biomass. She has research interest in co-gasification of coal and biomass, petcoke gasification.

**Dr. Swades Kumar Chaulya**



Dr. Swades Kumar Chaulya is a B. Tech., M. Tech., Ph.D. Scientist, CSIR-CIMFR Dhanbad. His research area includes wireless communication, mine instrumentation, automation in underground mines, monitoring and modelling, mine planning.

**Dr. Girendra Mohan Prasad**



Dr. Girendra Mohan Prasad is a (M.Sc., Ph.D.) Sr. Principal Scientist, CSIR-CIMFR, Dhanbad. His research area is mine instrumentation, automation, control and communication.

**Md. Shahnawaz Ansari**



Md. Shahnawaz Ansari is a (B.Tech (ECE), Diploma (ECE)) and currently working in CSIR-CIMFR, Dhanbad. His research area includes microprocessor, sensors and mine transport surveillance system.



#### **Mr. Rajkumar Prasad Verma**

Mr. Rajkumar Prasad Verma (Ph.D. pursuing), completed B.Tech. (CSE) and is currently working in CSIR-CIMFR, Dhanbad. His research area is underground coal gasification, cloud computing, sensors and modelling.



#### **Mr. Ranjeet Mandal**

Mr. Ranjeet Mandal (Ph.D. pursuing), completed P.G. Diploma (Industrial Automation), B. Tech (EIE) and is currently working in CSIR-CIMFR, Dhanbad. His research area is automation, gas sensors, PLC, underground coal gasification, mine surveillance.



#### **Mr. Dinesh Kumar**

Mr. Dinesh Kumar is a B. Tech (ECE), Diploma (ECE) and is currently working in CSIR-CIMFR, Dhanbad. His research area includes gas sensors and mine transport surveillance system.



#### **Dr. K. M. K. Sinha**

Dr. K. M. K. Sinha, a M.Tech. (Gold Medalist) and Ph.D. in Mineral Engineering from Indian School of Mines, Dhanbad and is life member of Indian Institute of Mineral Engineers, Mining, Geological and Metallurgical Institute of India. He joined Central institute of Mining and Fuel Research Dhanbad (erstwhile Central Fuel Research Institute) in the year 1997 and since then continuing to carry out R&D work primarily in the areas of coal preparation, other areas of interest include coal sampling etc. He has published more than 40 papers in different journals, conferences and seminars. Presently, he is holding the rank of Principal Scientist.



#### **Mr. G. S. Jha**

Mr. G. S. Jha is working in coal preparation since 1982 and since then apart from day to day work like sampling, washability investigations, flotation, agglomeration, etc. has been actively associated with various R&D work in different capacity related to coal preparation.



#### **Dr. K. M. P. Singh**

Dr. K.M.P. Singh, Ph D (Applied Chemistry) from ISM, Dhanbad, joined CFRI, Dhanbad in 2001 as a scientist and since then continuing to carry out R&D work primarily in the areas of coal preparation. Presently he is working as senior scientist in coal preparation department

and leading a project "Development of an online coal washability analyser" to assess the washability characteristics of coal almost instantly, using dual energy X-ray. He has published more than 50 papers in various national and international journals, seminars and technical reports. He visited Turkey for ICPC. He is life member of Indian Institute of Mineral Engineers, Jamshedpur; Mining, Geology and Metallurgical Institute of India, Kolkata; and Indian Institute of Metal, Kolkata.



#### **Dr. T. Gouri Charan**

Dr. T. Gouri Charan is working as a Senior Principal Scientist and Head of Research Group, Coal Preparation and Carbonization Division, CSIR-Central Institute of Mining & Fuel Research, Dhanbad. His main research interests are in the areas of coal washability, development of flow sheets for beneficiation of coking and non-coking coals, Fine coal beneficiation, dry beneficiation etc. Dr. Charan contributed towards development of flow sheets and suitable technology for treating LVC coals based on which five new coal washeries are being installed. He has published more than 90 papers in national, international journals and conferences. Dr. Charan is also a PhD guide, external examiner for different courses in mineral engineering.



#### **Mr. Prashant**

Mr. Prashant is Principal Scientist, Mine Backfilling Department. He obtained B-Tech. in Mining in 1996 and M.Tech in Opencast Mining from Indian School of Mines, Dhanbad in 2000. Mr. Prashant joined Mine Backfilling Department of CSIR-CIMFR as Scientist B in December 2001 and is presently working in the same department as Principal Scientist. He has completed about 85 R&D/consultancy projects. He has about 42 research publications to his credit. He is extensively engaged in the area of mine stowing and backfilling, rock mechanics instrumentation for strata control, environment friendly disposal of coal ash in underground and surface mines, exploration and exploitation potential of CMM in Indian coalfields, paste backfilling, optimal extraction of locked up coal by using artificial pillar technology and computer aided designing. He has received National Award for Fly Ash Utilization by the Ministry of Power, Ministry of Environment & Forest and Department of Science & Technology, Government of India, for R&D on the use of fly ash for stowing in underground mines.

#### **Dr. C. N. Ghosh**

Dr. C. N. Ghosh is Principal Scientist, Mine Backfilling Department. He did his B.Tech in Mining Engineering with 1st class (Hons.) from I.I.T., Kharagpur in 1985. He did his M.Tech in Mining Engineering in 1991 and Ph.D in Mining



Engineering in 1994 both from Indian School of Mines, Dhanbad. His main areas of research had been rock mechanics and ground control, design of support, mine stowing and filling, design of underground dams etc. He has published more than 50 research papers in different national and international journals, seminars, symposia etc. He is also acting as a referee for publication at different international journals. He has conducted several courses for foreign scientists on rock mechanics and ground control under UNDP. He is also acting as a reviewer for world bank funded projects in India on mining and environmental engineering. He has also received several awards from Institution of Engineers, CSIR etc. Presently he is working as head of mine backfilling department at CSIR- CIMFR, Dhanbad.

**Dr. P. K. Mandal**



Dr. P. K. Mandal is Principal Technical Officer, Mine Backfilling Department. Dr. Mandal obtained MSc. in Chemistry from Ranchi University, Ranchi and PhD. From Department of Chemistry, Vinoba Bhave University, Hazaribag. Dr. Mandal joined Mine Backfilling Department of CSIR-CIMFR as JSA Gr. III (1) in August 1984 and is presently Principal Technical Officer Gr.III(7).He has completed a number of R&D/consultancy projects. He has about 40 research publications to his credit. He has extensively engaged in the area of mine stowing and backfilling, rock mechanics instrumentation for strata control, environmental friendly disposal coal ash in underground and opencast mines. He is also a team member of the project conferred with national award for fly ash utilization by the Ministry of Power, Ministry of Environmental & Forest and Department of Science & Technology, Government of India for R&D on the use of fly ash for stowing in underground mines.

**Mr. S. K. Behera**



Mr. S. K. Behera is Scientist, Mine Backfilling Department. He obtained B-Tech. in Mining Engineering in 2012 from Orissa School of Mining Engineering, Keonjhar, Odisha. He joined CSIR-Central Institute of Mining & Fuel Research, Dhanbad as Trainee Scientist in September 2012 and obtained M.Tech in Mine Safety Engineering in 2014 from AcSIR, CSIR-Central Institute of Mining & Fuel Research, Dhanbad. Mr. Behera joined Mine Backfilling department of CSIR-CIMFR as Scientist in April 2016 and is presently working in the same department as Scientist. He is involved in many R&D and industry sponsored projects. He has 5 research publications to his credit. He is extensively engaged in the area of mine stowing and backfilling, optimal extraction of locked up coal by using artificial pillar

technology, paste filling, rock mechanics instrumentation for strata control, environment friendly disposal of coal ash in underground and surface mines, and numerical simulation of various geotechnical problems.

**Mr. Dharendra Kumar**



Mr. Dharendra Kumar is Senior Project Fellow, Mine Backfilling Department. He obtained BE in Mechanical Engineering from Birla Institute of Technology, Mesra, Ranchi, Jharkhand in May 2012. He is presently working at CSIR-Central Institute of Mining and Fuel Research, Dhanbad in Mine Backfilling Department as Senior Project Fellow.

**Dr. K.K.K. Singh**



Dr. K.K.K. Singh passed M.Sc. Tech. in Exploration Geophysics from Benaras Hindu University, Varanasi and got his Ph. D. degree from Indian School of Mines, Dhanbad on the topic “Delineation of subsurface in homogeneities using ground penetrating radar”. He has twenty six years research experience in the field of application of geophysics in rock engineering. He has published more than 60 research papers in national/international journals and seminars/symposia. He is recipient of H.S. Pareek Award of Geological Society of India, Bangalore for the best paper on coal sciences for the years 2010 and 2015. He is an evaluator of scientific papers to be published in international and national journals. Dr. Singh is nominated a member from India for the panel of International Technical Committee TC 10 on “Geophysical site characterisation”. He visited Canada and France for his research work. He is member of several professional bodies such as Geophysics and Society of Exploration Geophysicists. He completed many projects sponsored by the Ministry of Coal, Ministry of Environment & Forest, Coal India R&D Board, Department of Atomic Energy, Delhi Development Authority, Delhi and different subsidiaries of Coal India Limited and different collieries of private companies. He received National Geoscience Award 2013 for different challenging contributions and recognition of outstanding achievements in the field of “Mining Technology”.

**Prof. D.C. Panigrahi**



Prof. D.C. Panigrahi was Head, Department of Mining Engineering, Indian school of Mines, Dhanbad from 2007 to 2010. He took over as the Director, Indian school of Mines, Dhanbad in September 2011. He specializes in mine ventilation, mine fire control, coal bed methane and other areas related to underground mine environmental engineering. He has executed 14 major research projects as Project Leader. He published 124 research papers and edited

a book containing 64 papers of reputed authors from 9 countries and the book has been published by A. A. Balkema, Rotterdam, Netherlands in 2001. He has edited his second book containing 100 papers from reputed authors of 14 countries and the book has been published by Science Publishers of USA in 2009. He has guided 10 students for their Ph. D degree and 12 students for their M.Tech degree in Mining Engineering. He has successfully executed more than 333 industry sponsored major projects as Project Leader for solving the real life problems of 50 different organizations.

Prof. Panigrahi was nominated as one of the 11 members of the International Mine Ventilation Committee representing 11 leading mineral producing countries of the world in 1997 and elected as the Chairman of the same committee for the duration 2009-14. He is a member of International Advisory Board for the Journal Archives of Mining Sciences published by Polish Academy of Sciences, Poland since 2002.

He has been nominated as a member of Governing Body and General Body of National Institute of Rock Mechanics, Kolar Gold Fields, Karnataka; Member of Governing Council of Association of Indian Universities, New Delhi; Member of the Section 12 Committee under Mines Act constituted by Ministry of Labour and Employment, Government of India and several other committees.

For his significant contributions and distinguished services to the mining industry in India, he has been conferred several prestigious awards by Government of India, industry, professional bodies including National Mineral Award – 1998 by the Ministry of Mines and Minerals, Govt. of India; National Design Award-2012 by National Design and Research Forum of IE (I); Eminent Mining Engineer award during 23rd National Convention of Mining Engineers at Kolkata in 2012, etc.



**Mr. S. K. Ray**

Mr. S.K. Ray is Principal Scientist at CSIR-Central Institute of Mining and Fuel Research (CIMFR), Dhanbad. Before joining CIMFR, Dhanbad as Scientist in 1995, he served as a Lecturer in Nagpur University for four years.

He did his B.Sc. Engg. (Mining) from National Institute of Technology (erstwhile REC), Rourkela in 1990, M.Tech (Mine Planning and Design) from Indian Institute of Technology (erstwhile IT), Benaras Hindu University, Varanasi in 1993 and Ph. D (Mining Engineering) from Indian School of Mines, Dhanbad in 2013. He has 21 years of experience in R&D in mining and allied industries with additional exposure to HRD and academics, apart from 4 years' experience in teaching in undergraduate mining engineering. He is the recipient of "CSIR-Golden Jubilee CMRI-Whitaker Annual Award" and award for publication. He received D N Thakur award for the year 2010-2011 for his outstanding contribution in Earth Sciences from MGMI, Kolkata and SitaramRungta Memorial Award for the best paper for the year 2013 from MEAI. He has authored 73 research publications in international and national journals and conference proceedings including 28 in SCI Journal. He attended 10th International Mine Ventilation Congress (IMVC 2014) at Sun City, South Africa and presented his invaluable views regarding an alternative approach to determine spontaneous heating susceptibility of coals. He has five patents to his credit including one international patent. He is reviewer of a number of international journals, viz. Fire Technology, International Journal of Coal Geology and Arabian Journal of Geosciences. Apart from holding life membership of MGMI, MEAI, IME Journal Readers' Forum, ISCA, CSI, SGAT and ISRM he is a Fellow of The Institution of Engineers (India). His current research interests include mine fire and explosion and mine ventilation.

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