

Brief Bio-data

1.	Name	:	Dr. Prabhat Kumar Mandal
2.	Date of Birth	:	1st May 1968
3.	Current Position and Address	:	Chief Scientist & Head of Research Group, Mining Methods & Geomechanics, CSIR-CIMFR, Barwa Road, Dhanbad, 826001, India Tele (Offi.): (+91) (326) 2296017, Mob: +91-9431727200 Email: pkmandal@cimfr.nic.in / pkmandal@gmail.com Google Scholar , Orcid , ResearchGate , Publon , Scopus

4. Educational qualifications: (Graduation and above)

Sl. No.	Degree	Year of Passing	University/Institute	Subject
1.	Ph.D.	2010	IEST, Shibpur	Mining Engineering
2.	M.Tech.	1997	IIT, Kharagpur	Mining Engineering
3.	B.E.	1993	IEST, Shibpur	Mining Engineering

5. Work experience:

Designation	Institute/company	From	To	Nature of Work
Chief Scientist	CSIR-CIMFR, Dhanbad	10-05-2017	Till date	R&D/Collaborative/ Industry-sponsored Projects
Scientist-B/Scientist-C/Scientist-E1/ Pr. Scientist/ Sr. Principal Scientist	CSIR-CIMFR, Dhanbad	10-05-1994	09-05-2017	

6. Work Area(s)/ Specialization:

Rock mechanics, ground control, computational geomechanics, underground mining methods, numerical modelling, strata control and management, stability analysis and instrumentation and monitoring of underground structures related to coal and non-coal/metal mining.

7. Major contributions: (Max. 100 words):

My contributions in the completed R&D projects have a long and sustainable impact on the mining industry and significantly helped to achieve energy security in the country. Under my leadership, a number of coal mining technologies have been developed/practised in underground mines for extraction of thick/contiguous/multiple/critically thick/inclined coal seams, seams under the surface/sub-surface structures, forest land, below/adjacent goaves, etc. I have designed Continuous Miner (CM) based extraction methodologies in different mines besides developing a predictive model for assessment of Cut-out Distance (COD)/convergence for the safe and productive operation of CM and strength formulae for coal pillars of inclined coal seams.

8. No. of Research Publications:

Papers in Journals	In conference proceedings	Invited lectures delivered
58	96	8

• List of best 05 publications:

- (i) Mandal, P. K., Das, A. J., Kumar, N., Bhattacharjee, R., Tewari, S., & Kushwaha, A. (2018). Assessment of roof convergence during driving roadways in underground coal mines by continuous miner. *International Journal of Rock Mechanics and Mining Sciences*, 108, 169-178.
- (ii) Mandal, P. K., Singh, R., Maiti, J., Singh, A. K., Kumar, R., & Sinha, A. (2008). Underpinning-based simultaneous extraction of contiguous sections of a thick coal seam under weak and laminated parting. *International Journal of Rock Mechanics and Mining Sciences*, 45(1), 11-28.
- (iii) Das, A. J., Mandal, P. K., Paul, P. S., & Sinha, R. K. (2019). Generalised analytical models for the strength of the inclined as well as the flat coal pillars using rock mass failure criterion. *Rock Mechanics and Rock Engineering*, 52(10), 3921-3946.
- (iv) Das, A. J., Mandal, P. K., Bhattacharjee, R., Tewari, S., Kushwaha, A. & Roy, L. B. (2017). Evaluation of stability of underground workings for exploitation of an inclined coal seam by the ubiquitous joint model. *International Journal of Rock Mechanics and Mining Sciences*, 93, 101-114.
- (v) Das, A. J., Mandal, P. K., Paul, P. S., Sinha, R. K., & Tewari, S. (2019). Assessment of the strength of inclined coal pillars through numerical modelling based on the ubiquitous joint model. *Rock Mechanics and Rock Engineering*, 52(10), 3691-3717.

- **Books/Chapters authored/edited: 02**

9. List of 5 Major Contract R&D Projects:

- (i) Development of model vis-a-vis study of parameters influencing abutment loading of pillars at a depillaring face of shallow depth cover and under massive roof strata (MoC, Govt. of India).
- (ii) Development of a mining method for final extraction of a critically thick coal seam standing on pillars and development made along the roof horizon (MOC, Govt. of India).
- (iii) Rock mechanics investigations to meet challenges of strata control of deep underground coal mining (Bilateral Exchange Programme with ASCR, The Czech Republic and CSIR, India).
- (iv) To find a methodology of safe liquidation in thick seams of Raniganj Coalfields: Design, development & show-casing demonstrative trials at Khottadih Colliery, ECL (CIL R&D Board).
- (v) Development of tele-robotics and remote operation technology for underground coal Mines (MOC, Govt. of India)

10. (a) Name of Patents/Copyrights applied /granted/commercialized:

- i) A novel method for underground extraction of coal from contiguous seams/sections.
- ii) A novel method of mining for underground extraction of coal from a critically thick coal seam standing on pillars and development made along the roof horizon.
- iii) Wireless strata information system for underground openings.
- iv) A device useful for supporting the underground mine side wall for highly dipping mine having pillars with acute angles corners.
- v) Internet Based Real Time Safety Analysis (iRTSA) Software.
- vi) DM - Digital Mine Software.
- vii) Pythonic Data Logging Software (PDLs).

(b) Technologies/Products /knowhow/Services developed:

- (i) Mechanized/Continuous Miner based/semi-mechanized extraction methodologies for thick, contiguous, critically thick, inclined and thin coal seams.
- (ii) Underpinning and cable bolting based methods of mining.
- (iii) Strength formulae for inclined and flat coal pillars.
- (iv) Numerical modelling for stability assessment of underground structures and support design during underground extraction of coal and ore deposits.

11. Honors/Awards/Recognitions/Fellowships/Scholarships/Professional Memberships received:

- Academic Editor, Advances in Civil Engineering, an SCIE Indexed Journal by Hindawi, UK.
- Editorial Board Member, Journal of Mines, Metals & Fuels, A Scopus Indexed Journal.
- Topic Editor, Sustainability, an SCIE Indexed Journal by MDPI, Switzerland.
- Hindustan Zinc Limited Prize of the Institution of Engineers (India), 2007-2008.
- MGMI Silver Medal in the year 2005-2006.
- Fellow, Institution of Engineers (India).
- CSIR Golden Jubilee – CMRI Whitaker Award for 2000-2001.
- Best PhD thesis in India selected by the Indian National Group of ISRM and nominated for the “Rocha Medal” of ISRM for the award in 2013.
- Certificate of Outstanding Contribution in Reviewing by the Editors of IJRMMS, Elsevier.
- Member of a number of professional societies/bodies like ISRM, MGMI, IGS, MEAI, etc.
- International Technical Committee member in the Organising Committee of the International Conference on Maintenance and Intelligent Asset Management (ICMIAM) to be held at Federation University, Ballarat Victoria, Australia on December 12-15, 2021.

12. Societal Contributions:

- ✓ My contributions in coal mining supported the industry to extract coal from difficult geomining conditions with higher production, productivity and safety. It leads towards sustainable mining by minimising the wastage of this valuable fossil fuel. Society is benefited by getting electricity at an affordable price.
- ✓ Supervised/being supervised a number of M.Tech/Ph.D students, taken/is being taken classes of AcSIR students as a Professor of AcSIR and also provide training to the graduate/post-graduate students of different colleges/universities.