

Brief Bio-data

1. Name: RANA BHATTACHARJEE

2. Date of Birth: 22nd November 1970

3. Current Position and Address (Include Email ID and Contact Number):

Sr Technical Officer (I), Geomechanics and Numerical Simulation

CSIR-Central Institute of Mining and Fuel Research, Barwa Road, Dhanbad-826001

Email ID: rana_b@cimfr.nic.in; Contact Number: 9431723528

4. Educational qualifications:

Sl. No.	Degree	Year of Passing	University/ Institute	Subject
i)	Diploma in Mining and Mine Surveying	1995	State Board of Technical Education, Bihar	Mining Tech.- II, III, IV; Mine Surveying, Engineering, Mine Safety, Management & Legis.
ii)	Honours Diploma in Network Centered Computing	1998	NIIT, Dhanbad	Computer Overview, DOS, Windows, LAN, MS Office, Internet, UNIX, Sybase, C++
iii)	Surveyor's certificate			

5. Work experience:

Designation	Institute/company	From	To	Nature of Work
Gr.III(1) & III(2), JSA & SSA	CSIR-CIMFR, Dhanbad	1999	2009	R&D work
Gr.III (3), Technical Officer	CSIR-CIMFR, Dhanbad	2009	2014	R&D work
Gr.III (4), Sr. Tech. Officer (I)	CSIR-CIMFR, Dhanbad	2014	Contd..	R&D work

6. Work Area(s)/ Specialization: Rock Mechanics and Ground Control aspects in Bord & Pillar Mining, Underground Mining Methods and Numerical Modelling

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

- Formulation of SCAMP in underground coal mines.
- Design of method of mining for the deployment of Continuous Miner for mechanised extraction below hard roof strata and below caved goaves.
- Design of "Goaf Pillar Method of Mining" below water-logged workings, "Non-effective Width Method of Mining" below surface or sub-surface structures and "Yield Pillar technique for depillaring under hard strata.
- Team member in developing sandwich pillar strength equation for coal seam.
- Associated with 8 Grant-in-aid projects, 1 Network Project and more than 100 industry sponsored projects. Two patents as co-patentee and 25 publications in national / international journals and conference proceedings as co-author.

8. No. of Research Publications:

- Papers in Journals: 09
- In conference proceedings: 16
- Invited lectures delivered: Nil
- List of best 05 publications:
 - i) A.J.Das, P.K. Mandal, R. Bhattacharjee, S. Tewari, A Kushwaha and L.B. Roy
"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 (2017), pp.101- 114

- ii) S. Tewari, A. Kushwaha, R. Bhattacharjee, and John Loui Porathur, "*Crown pillar design in highly dipping coal seam*", International Journal of Rock Mechanics and Mining Sciences 103 (2018), pp. 12-19
- iii) John Loui Porathur, Minnie Jose, Rana Bhattacharjee and Subhashish Tewari, "*Numerical modelling approach for design of water-retaining dams in underground hard rock mines – a case example*", Arabian Journal of Geosciences, December 2018, <https://doi.org/10.1007/s12517-018-4097-y>
- iv) Prabhat Kumar Mandal, Arka Jyoti Das, Nirmal Kumar, Rana Bhattacharjee, Subhashish Tewari and Angad Kushwaha "*Assessment of roof convergence during driving roadways in underground coal mines by continuous miner*" International Journal of Rock Mechanics and Mining Sciences. (2018) Vol 108, pp. 169-178
- v) Angad Kushwaha, Subhashish Tewari, Prabhat Kumar Mandal, Rana Bhattacharjee, Arka Jyoti Das and Krishna Kant Kumar Singh, "*Stability Evaluation of Old and Unapproachable Underground Mine Workings below Surface Structures*" Journal of Geological Society of India, Vol.93, March 2019, pp.351-359

- Books/Chapters authored/edited: Nil

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

- i) Stability of parting between coal pillar workings in level contiguous seam during depillaring (GAP/006/MT/MOC/04-05)
- ii) Development of support guidelines for depillaring panels in Indian coal mines (GAP/008/MT/MOC/2001-2002, MT/126)
- iii) Development of suitable subsidence prediction model for single seam workings in SECL areas (GAP/27/MT/MOC/2001-2002, MT/122)
- iv) Delineation of workings below railway lines near Ratibati Colliery, stability analysis by numerical modelling and possible remedial measures (GAP/79/MT/CIL/2009-10)
- v) Development of suitable design methodology for extraction of coal at greater depths (>300m) for Indian geo-mining conditions. (ESC-0303, XIIth Five year plan, Network Project)

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

- i) "*A device for measuring roof convergence in mechanised underground coal mine workings*", Patent No. IN266305, Date of Publication 01/5/2015, Journal No. 18/2015.
- ii) "*A device useful for supporting the underground mine side wall for highly dipping mine having pillars with acute angle corners*", Patent application number '201811008499 A; Published in The Patent Office Journal No. 37/2019 dated 13/09/2019 in page number 42195.

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

11. Honors/Awards/Recognitions/Fellowships/Scholarships/Professional Memberships received: Received citation and cash prize as a co-author from "Indian Society for Rock Mechanics and Tunneling Technology" (ISRMTT) for best paper award published in Journal of Rock Mechanics and Tunneling Technology (JRM TT) under the category "Case History in Mining" for the year 2015

12. Societal Contributions: Providing free meals to the needy during Covid-19 induced lockdown; Teaching students of 'Abhoya Sundari Girls' School', a government school on non-working days (Class-IX, Physics) in the year 2016