

## Brief Bio-data

1. Name: Dr. Arun Kumar Singh

2. Date of Birth: 24-09-1972

3. Current Position and Address:

Senior Principal Scientist & Head, Rockmass Characterisation and Innovative Mining Methods Section, CSIR-CIMFR, Barwa Road, Dhanbad, 826015 (Jharkhand), Contact No.- 9431728535, Email- arun@cimfr.nic.in/aksingh72@Yahoo.Com

4. Educational qualifications:

Sl. No.	Degree	Year	University/Institute	Subject
1.	Ph. D.	2010	B.E.S. University, Shibpur, Howrah	Mining
2.	M. Tech.	1996	IIT Kharagpur	Mining
3.	B. Sc. Engg.	1993	V.B. University, Hazaribagh / BIT, Sindri	Mining

5. Work experience:

Designation	Institute	From	To	Nature of work
Senior Principal Scientist	CSIR-CIMFR	25-08-2014	Till date	R&D
Principal Scientist	CSIR-CIMFR	25-08-2009	24-08.2014	R&D
Scientist 'E-I'	CSIR-CIMFR	25-08-2005	24-08-2009	R&D
Scientist 'C'	CSIR-CIMFR	25-08-2001	24-08-2005	R&D
Scientist 'B'	CSIR-CIMFR	25-08-1997	24-08-2001	R&D

6. Work Area(s)/ Specialization:

Strata/Rock Mechanics for ground Control in Underground Coal Mining, Mining methods, Simulation of Mining Structures, Underground Instrumentation and Monitoring of Strata.

7. Major contributions:

My personal R&D efforts and management skill resulted in successful completion of more than 100 in-house and industry-sponsored projects, including three S&T projects of the Ministry of Coal, Govt. of India. It led to development of some popular methods for safe and clean extraction of coal seams, appreciation from the involved industry, considerable number of publications in the best rock-mechanics, mining engineering National and International journals/seminars symposium. My contributions are well proven and found to be of immense importance for excellence of production, productivity, safety and conservation. I also initiated a collaborative R&D work with Institute of Geonics, the Czech Republic.

8. No. of Research Publications:

- Papers in Journals: Forty-five (Twenty in International journals)
- In conference proceedings: Fifty (Twenty-seven in international conferences)
- Invited lectures delivered: -
- List of best 05 publications:
  - (i) **Singh AK**, Singh R, Maiti J, Mandal PK, Kumar R (2011). Assessment of mining induced stress development over coal pillars during depillaring. Int J Rock Mech Min Sci, Vol. 48: 805-818 (Q1, IF-7.135 and Citations- 99).
  - (ii) Singh R, **Singh AK**, Maiti J, Mandal PK, Singh Rashmi, Kumar R (2011). An observational approach for assessment of dynamic loading during underground coal pillar extraction. Int J Rock Mech Min Sci, Vol. 45(1):794-804 (Q1, IF-7.135 and Citations- 31).
  - (i) Singh R, Kumar A, **Singh AK**, Coggan J, Ram S (2016). Rib/snook design in mechanised depillaring of rectangular/square pillars, Int J Rock Mech Min Sci, Vol. 84: 119-129. (Q1, IF-7.135 and Citations- 26).
  - (ii) Kumar A, Kumar D, **Singh AK**, Ram S, Kumar R, Gautam A, Singh R, Singh, AK (2019). Roof sagging limit in an early warning system for safe coal pillar extraction. Int J Rock Mech Min Sci, Vol. 123, Article No.104131. (Q1, IF-7.135 and Citations- 7).
  - (iii) **Singh AK**, Kumar A, Kumar D, Singh R, Ram S, Kumar R (2020). Coal pillar extraction under weak roof. Mining, Metallurgy & Exploration. DOI: 10.1007/s42461-02000277-8.

- Books/Chapters authored/edited: One
9. List of 5 Major Contract R&D Projects:
- (i) Development of method of mining for extraction of thick & steep seams of NEC, Sponsored by Ministry of Coal, Govt. of India.
  - (ii) Development of a model vis-à-vis study of parameters influencing abutment loading of pillars at a depillaring face of shallow depth cover and under massive strata, sponsored by Ministry of Coal, Govt. of India.
  - (iii) Development of a mining method for final extraction of a critically thick coal seam standing on pillars along the roof horizon, sponsored by Ministry of Coal, Govt. of India.
  - (iv) Scientific study of strata movement during widening and heightening of existing galleries and depillaring of CM panels A1-A and A1-B of No. 1 at GDK-11 Incline mine, RG-I Area, SCCL through underground instrumentation and monitoring.
  - (v) Scientific study to assess the efficacy of the support system during the working of the panel and thereafter continuously monitor the strata movement from the outside of the panel till the completion of extraction in the panel and two subsequent years at Sarni UG Mine E3 panel of Pathakhera Area, WCL.
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 for underground extraction of coal from a critically thick coal seam standing on pillars and the development made along the roof horizon.
  - (iii) A model for rib/snook design in mechanised depillaring under moderate roof strata.
  - (iv) A Method for Efficient Design of Breaker Line Support in Mechanized Depillaring.
  - (v) Combined Instrument Approach for analysis of underground instrumentation data.
- (b) Technologies/Products /knowhow/Services developed:
- Cable bolting based mechanised depillaring method for extraction of thick and difficult coal seams.
  - Underpinning based depillaring method for thick and contiguous seams/sections under weak and laminated parting.
  - Empirical model to assess nature and amount of mining induced stress development over the coal pillars during a depillaring operation and
  - Efficient design of rib and breaker line support in mechanized depillaring.
11. Honors/Awards/Recognitions/Fellowships/Scholarships/Professional Memberships received:
- National Geo-science Award- 2018 in the area of Mining Technology
  - Silver Medal of the Mining Geological & Metallurgical Institute of India- 2005
  - CSIR-Golden Jubilee CMRI-Whitaker Award- 2001
  - Mining Engineers' Association of India [Life Member]
  - Mining, Geological and Metallurgical Institute of India [Life Member]
  - Institution of Engineers [Life Member]
12. Societal Contributions:
- Our R&D efforts in underground coal mining has improved coal production by large scale and replaced the intervention of foreign consultant which substituted the import of coal to some extent, enabled the country to be self-reliant in terms of coal and also resulted in saving of foreign exchange. Disastrous environmental impact (air and water pollution) on surrounding area, flora and fauna due to the opencast mining has also been considerably reduced by the underground mining. I am voluntarily involved in different government programmes organized at CSIR-CIMFR for dispersion of science among the masses.