

1. **Name:** Dr Santosh Kumar Ray
2. **Date of Birth:** 01.01.1967
3. **Current Position and Address:** Principal Scientist
(with E-mail & Phone no.)

Mine Ventilation Division
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4. Educational qualifications: (Graduation and above)

Sl. No	Degree/ Certificate	Year of Passing	University/ Institute	Subjects
1	B Sc. Engg. (Mining)	1990	Regional Engineering College [Now NIT] Rourkela	Mining Engineering
2	M. Tech	1993	Institute of Technology [Now IIT, BHU] Varanasi	Mine Planning and Design
3	Ph. D	2013	Indian School of Mines [Now IIT (ISM)], Dhanbad	Mining Engineering

5. Work experience

S No.	Period	Place of Employment	Designation	Nature of work
1	20.11.1991 to 09.11.95	RKNEC Nagpur, Nagpur University	Lecturer	Teaching to undergraduate Engg. students
2	14.11.1995 to 13.11.2000	CSIR-CIMFR Dhanbad	Scientist B	R&D Work
3	14.11.2000 to 13.11.2004	CSIR-CIMFR Dhanbad	Scientist C	R&D Work
4	14.11.2004 to 13.11.2009	CSIR-CIMFR Dhanbad	Scientist E1	R&D Work
5	14.11.2009 to till date	CSIR-CIMFR Dhanbad	Principal Scientist	R&D Work

6. Area of specialization

Mine Fire and Mine Ventilation

7. Honors/Awards received:

- i) MEAI-SitaramRungta Memorial Award for the best paper on Mining related issues during the year 2013
- ii) D N Thakur award for the year 2010-2011 by Mining Geological & Metallurgical Institute, Kolkata
- iii) Awarded by CSIR-CIMFR, (the then CMRI) Dhanbad and presented with citation and a cash prize for contribution to National Filing of Patent in the year 2004-2005
- iv) Awarded Second prize for publication in the year 2003-04 by CSIR-CIMFR, (the then CMRI) Dhanbad
- v) **CSIR** - Golden Jubilee CMRI - **Whitaker Annual Award** in 2002-03 by CSIR-CIMFR, Dhanbad for R&D work in the field of mining and cognate subjects
- vi) Awarded by CSIR-CIMFR, (the then CMRI) Dhanbad and presented with citation and a cash prize for contribution to International Filing of Patent in the year 2000
- vii) Received Dr.Rajendra Prasad Memorial Prize from The Institution of Engineers (India) for publication of paper in Journal of The Institution of Engineers (India) Series D, Vol 96, Issue 2.
- viii) National Geoscience Award 2016 by Ministry of Mines, Government of India. The award was given by President of India

8. Fellowships/Scholarships:

- (i) Availed GATE Scholarships from MHRD, Govt. of India during Master's Program
- (ii) Received Merit-cum-Means Scholarships during undergraduate level

9. No. of Research Publications:

- Papers in International Journals: 19
- Papers in National Journals: 18
- Papers in International conference proceedings: 18
- Papers in National conference proceedings: 23
- Invited/key-note addresses: 05

List of best 05 publications:

- I. **S K Ray** and R P Singh, "Recent developments and practices to control fire in underground coal mines", Fire Technology, Vol. 43, December 2007, pp 285-300, **Cited by 32, FIRE TECHNOL, Impact factor 1.297**
- II. **S K Ray**, R P Singh, N Sahay and N K Varma, "Assessing the status of sealed fire in underground coal mines" Journal of Scientific & Industrial Research, Vol 63, July 2004, pp 579-591, **Cited by 21 J. Sci. Ind. Res., Impact factor 0.385**

- III. **S K Ray** and R P Singh, "Effects of water mist on open fire – A model study" Mining Technology (Transactions of the Institutions of Mining and Metallurgy, Section A), Vol. 114, No. 1, March 2005, pp 1-12, **Cited by 9**
- IV. Santosh Kumar Ray, DurgaCharanPanigrahi and Atul Kumar Varma, "An electro-chemical method for determining the susceptibility of Indian coals to spontaneous heating", International Journal of Coal Geology, Vol. 128-129, August 2014, pp 68-80. **Impact factor 4.783, Cited by 5**
- V. **S K Ray**, M Sarkar and T N Singh "Effect of cyclic loading and strain rate on the mechanical behaviour of sandstone" Int. J. Rock Mech. Min. Sci., Vol. 36, No. 4, June 1999, pp. 543-549, **Impact factor 1.686, Cited by 80**
- VI. D. C Panigrahi and S. K. Ray, "Assessment of self-heating susceptibility of Indian coal seams - a neural network approach", Archives of Mining Sciences Vol. 59, No. 4, 2014, pp1061-1076. **Impact factor 0.550** (<http://www.degruyter.com/view/j/amsc>) **Cited by 5**

10. **Number of Books authored/edited:**

- Co-editor, proceedings of Policies, Statutes & Legislation in Mines 2008 [POSTALE 2008]
- Member, editorial committee of 9th International Mine Ventilation Congress, India, 2009

11. (a) **No. of Patents granted/applied for:** 05 including one US patent

(b) **Technologies developed,** Licensed and/or commercialized: Nil

12. **Foreign visits:**

- Visited abroad during 4-9 August 2014 and attended 10th International Mine Ventilation Congress (IMVC 2014) at Sun City, South Africa and presented invaluable views regarding an alternative approach to determine spontaneous heating susceptibility of coals. The visit was funded by Indian National Science Academy, New Delhi and CSIR-ISTAD, New Delhi.

13. Details of Professional memberships:

Membership of Professional Societies

Sl. No.	Membership	Professional Societies
1.	Fellow	The Institution of Engineers (India), Kolkata
2.	Life Member	Mining Engineers Association of India, Hyderabad, India
3.	Life Member	The Mining, Geological and Metallurgical Institute of India, Kolkata, India
4.	Life Member	Indian Science Congress, Kolkata, India
5.	Life member	International Society for Rock Mechanics
6.	Life Member	Computer Society of India
7.	Life Member	Indian Mining Engineering Journal Readers' Forum, Bhubaneswar, India
8.	Life Member	Society of Geoscientists and Allied Technologists Bhubaneswar, India

Acting as Secretary, Mining Engineers Association of India, Dhanbad chapter

14. Major contributions: (Max. 150 words)

Developed and standardized an electrochemical method called **Wet Oxidation Potential Method** for determining the **susceptibility of coal to spontaneous heating**. This method provides reliable and reproducible result even for high moisture coals.

In the wet oxidation potential method emphasis is given to change in potential difference during the oxidation process. It is a low temperature oxidation process

Water mist has been applied to open fire during experimentation in Mine Fire Model Gallery for the first time in India and got encouraging results to control fire.

For the first time in India, efficacy of High pressure high stability nitrogen foam technology has been assessed in Mine Fire Model Gallery in case of open as well as sealed fire. This technology has already started yielding results by way of controlling fires in Jhanjra Colliery, ECL, Sudamdih Shaft Mine, Lodna Colliery of BCCL, etc.

15. Technologies and Products/ Services Nil

- (i) Developed:
- (ii) Licensed:
- (iii) Commercialized:

16. Designs and Prototype Developed: Nil

17. Honours and awards won for technological contributions or sociological impact of R&D:

- i) National Geoscience Award 2016 instituted by Ministry of Mines, Government of India. The award was given by President of India.