

Brief Bio-data

1. Name: Jaywardhan Kumar

2. Date of Birth: 15/09/1987

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

Scientist, CSIR-CIMFR, Dhanbad, MSA-II/11, Barwa Road Jharkhand- 826001

Email: jaywardhan@cimfr.nic.in

Mobile: 7766939569

4. Educational qualifications: (Graduation and above)

Sl. No.	Degree	Year of Passing	University/Institute	Subject
1.	M.Tech	2014	AcSIR	Mine Safety Engg
2.	B.Tech	2011	B.I.T Sindri	Chemical Engg

5. Work experience:

Designation	Institute/company	From	To	Nature of Work
Trainee Scientist	CSIR-CIMFR, Dhanbad	Sep 2012	Aug 2014	R&D
Scientist	CSIR-CIMFR, Dhanbad	April 2016	Present date	R&D

6. Work Area(s)/ Specialization: Fugitive emission, Coalbed methane, shale gas, CO₂ sequestration

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

- (i) Contributed to the development of coal-based porous reservoirs such as coalbed methane (CBM) and shale gas for hydrocarbon recovery
- (ii) Conducting analytical studies such as surface area determination, proximate analysis, ultimate analysis, High-pressure sorption study, gas chromatography, etc., to determine the gas storage and production potential for CBM and shale gas
- (iii) Field Investigations for determination of in-situ gas content of porous coal and shale reservoirs
- (iv) Quantitative and Qualitative Study of desorbed gas from CBM and shale reservoirs using a gas chromatograph
- (v) Quantification of fugitive CH₄/CO₂ emission from coal mining and handling activities and oil and natural gas systems in India
- (vi) Preparation of fugitive emission inventory for coal mining and oil and natural gas systems in India to be communicated to the United Nations Framework Convention on Climate Change (UNFCCC) through Biennial Update Report (BUR) and National Communication.
- (vii) Conducting carbon footprint (C-foot print) of coal mines.
- (viii) Scientific investigation for methane emission in coal mines and advice on associated gas hazards.

8. No. of Research Publications: 10

(International Journals-3, National Journal-1, Conferences & Seminar - 6)

- Papers in Journals:

Kumar, J., Mendhe, V.A., Kamble, A.D., Bannerjee, M., Mishra, S., Singh, B.D., Mishra, V.K., Singh, P.K. and Singh, H., 2018. Coalbed methane reservoir characteristics of coal seams of south Karanpura coalfield, Jharkhand, India. *International Journal of Coal Geology*, 196, pp.185-200.

Mendhe, V.A., Kumar, V., Saxena, V.K., Bannerjee, M., Kamble, A.D., Singh, B.D., Mishra, S., Sharma, S., Kumar, J., Varma, A.K. and Mishra, D.K., 2018. Evaluation of gas resource potentiality, geochemical and mineralogical characteristics of Permian shale beds of Latehar-Auranga Coalfield, India. *International Journal of Coal Geology*, 196, pp.43-62.

Singh, A.K. and Kumar, J., 2016. Fugitive Methane emissions from Indian Coal Mining and handling activities: estimates, mitigation and opportunities for its utilization to generate clean energy. *Energy Procedia*, 90, pp.336-348.

Kumar, J., Singh, A.K. 2015. Quantification of Fugitive Methane Emission from Coal Mining and Handling Activities for Recent Years in India. *Indian Journal of Environmental Protection*. Volume 35. pp.47-52.

- In conference proceedings:

Kumar, J., Singh, H., Mendhe, V.A., Dey M. 2019. Fugitive Carbon dioxide (CO₂) emission from underground coal mine- A case study, National Seminar on "Recent Advancements in Coal Carbonisation Challenges and Opportunities – 2019 (RACC 2019), Dhanbad, India, 28-29th November, 2019, pp. 126-130

Bannerjee, M., Mendhe, V. A., Kamble A. D., Singh, H., Mishra, V. K., Kumar, J. 2019. "Coalbed Methane Resource Potential and Dynamic Reservoir Characteristics of East Bokaro Coalfield, India" International Conference and Exhibition on Energy and Environment: Challenges and Opportunities (ENCO-2019), New Delhi, India, Feb 20-22, 2019.

Kumar, J. 2018. Carbon capture and storage a tool for low carbon pathway for the coal-dominated power sector in India. Recent Challenges in Mining Industry (RCMI-2018). 28th April 2018, CSIR-CIMFR, Dhanbad, Jharkhand.

Kumar, J., Singh, A.K., Mohanty, D. 2017. "Petroleum Industry in India: Overview, Associated Fugitive Methane Emissions and Mitigation Options". International Conference on NexGen Technologies for Mining and Fuel Industries (NxGnMiFu- 2017). Vigyan Bhawan, New Delhi, 15-17th February 2017. Pp.1437-1446.

Kumar, J., Singh, A.K. 2016. "Evaluation of Carbon Capture Potential from Thermal Power Plants and its Storage in Geological Formations in India". 6th Asian Mining Congress and Exhibition 23-27 February 2016. Kolkata, India. Pp-399-408.

Singh, AK., Kumar, J., Garg, A., 2015. "Fugitive methane emissions from Indian coal mining and handling activities: Estimates and opportunities for its utilization to generate clean energy". International Scientific Conference "Our Common Future under Climate Change", 7-10 July 2015, Paris, France.

- Invited lectures delivered: 2

1. Coalbed methane (CBM) & Coal Mine Methane (CMM) in the Faculty Development Programme on Nonconventional Energy Sources: Technologies and Trends held at the Department of Chemical Engineering, Government Engineering College, Kozhikode from 26th to 31st July 2021 under the sponsorship of TEQIP – II.

2. Hands-on Reservoir Simulation through COMET-3 in the Executive Training Program on Best Practices in Coalbed Methane Exploration and Production from 9-13 January 2017 at CSIR-CIMFR, Dhanbad sponsored by SERB, New Delhi

- List of best 05 publications

Kumar, J., Mendhe, V.A., Kamble, A.D., Bannerjee, M., Mishra, S., Singh, B.D., Mishra, V.K., Singh, P.K. and Singh, H., 2018. Coalbed methane reservoir characteristics of coal seams of south Karanpura coalfield, Jharkhand, India. *International Journal of Coal Geology*, 196, pp.185-200.

Mendhe, V.A., Kumar, V., Saxena, V.K., Bannerjee, M., Kamble, A.D., Singh, B.D., Mishra, S., Sharma, S., Kumar, J., Varma, A.K. and Mishra, D.K., 2018. Evaluation of gas resource potentiality, geochemical and mineralogical characteristics of Permian shale beds of Latehar-Auranga Coalfield, India. *International Journal of Coal Geology*, 196, pp.43-62.

Singh, A.K. and Kumar, J., 2016. Fugitive Methane emissions from Indian Coal Mining and handling activities: estimates, mitigation and opportunities for its utilization to generate clean energy. *Energy Procedia*, 90, pp.336-348.

Bannerjee, M., Mendhe, V. A., Kamble A. D., Singh, H., Mishra, V. K., Kumar, J. 2019. "Coalbed Methane Resource Potential and Dynamic Reservoir Characteristics of East Bokaro Coalfield, India" *International Conference and Exhibition on Energy and Environment: Challenges and Opportunities (ENCO-2019)*, New Delhi, India, Feb 20-22, 2019.

Kumar, J., Singh, A.K. 2016. "Evaluation of Carbon Capture Potential from Thermal Power Plants and its Storage in Geological Formations in India". *6th Asian Mining Congress and Exhibition 23-27 February 2016*. Kolkata, India. Pp-399-408.

- Books/Chapters authored/edited

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

(i) Estimation of Fugitive Carbon Dioxide Emissions from Indian Coal Mining Activities. R&D project funded by the Science & Engineering Research Board (SERB) New Delhi

(ii) Studies on sorption induced strain and permeability changes in coal and shale as a result of CO₂ injection. R&D project funded by CSIR under FBR/NCP Category

(iii) Shale gas potentiality evaluation of Damodar Basin of India. R&D project funded by Ministry of Coal (MoC).

(iv) Geo-chemical and specialized properties of coal cores samples from Raniganj, Jharia and Damodar-Koel valley of West Bengal and Jharkhand. Sponsored project funded by Geological Survey of India (GSI)

(v) Gas Desorption and Adsorption Study of Coal Core Samples at Near Ramgarh/Kuju Drilling Site (BK#28). Sponsored project funded by ONGC, Bokaro.

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

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

Development of national emission factors for fugitive CO₂/CH₄ emission from coal mining and handling activities in India

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

(i) Dr. K. N Sinha Award for the Highest-Impact Factor of papers published in SCI Journals by Scientific staff members in the year 2018-19

(ii) R&D Dialogue Award by CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad in recognition of presentation on "Evaluation of Carbon Capture Potential from Thermal Power Plants and its Storage in Geological Formations in India" in the lecture series of CSIR-CIMFR for the year 2016.

(iii) Second prize in Kaalyapan organized by SARJANA- The Institute Magazine at B.I.T Sindri

(iv) Member of Mining Engineers' Association of India (MEAI) Dhanbad Chapter

12. Societal Contributions

More than 20 young technocrats from different Autonomous/central/state/private premier institutes across India such as IIT (ISM), Dhanbad, BITS Pillani, BIT Sindri, Heritage Institute of Technology, Dhaanish Ahmed College of Engineering, Chennai, have been guided for their project work at CSIR-CIMFR, Dhanbad.