

Brief Bio-data

1. **Name:** Dr. Vivek Kumar Himanshu

2. **Date of Birth:** 10.10.1988

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

Senior Scientist, Rock Excavation Engineering Research Group
CSIR-Central Institute of Mining and Fuel Research
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4. **Educational qualifications: (Graduation and above)**

Sl. No.	Degree	Year of Passing	University/Institute	Subject
01	B. Tech	2011	B.I.T Sindri	Mining Engineering
02	M. Tech	2014	Academy of Scientific and Innovative Research	Mine Safety Engineering
03	PhD	2022	Indian Institute of Technology (ISM), Dhanbad	Mining Engineering

5. **Work experience:**

Designation	Institute/company	From	To	Nature of Work
Graduate Engineer Trainee (Mining)	Hindustan Copper Limited	August 2011	September 2012	Management and Supervision
Trainee Scientist	CSIR-Central Institute of Mining and Fuel Research, Dhanbad	September 2012	September 2014	R & D
Assistant Professor	Dr. B. R. Ambedkar National Institute of Technology, Jalandhar	January 2015	May 2015	Teaching
Assistant Professor	National Institute of Technology, Rourkela	October 2015	May 2016	Teaching and R &D
Scientist	CSIR-Central Institute of Mining and Fuel Research, Dhanbad	May 2016	May 2020	R & D

Senior Scientist	CSIR-Central Institute of Mining and Fuel Research, Dhanbad	May 2020	Present	R&D, Consultancy projects
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6. Work Area(s)/ Specialization: Rock Blasting; Vibration; Numerical Simulation; Rock Mechanics

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

Based on R&D works carried out by Dr. Himanshu and his team, the scientific method has been devised to investigate the rock-explosive interactions under blasting. The method has been used to solve the practical problems of the industries. The optimization of drilling and blasting parameters has been done for the underground drivages and slot raise excavations using the rock-explosive interaction study. Further, a new multivariate blast vibration predictor has also been developed. The predictor consists of hole diameter, total explosive charge, distance and numbers of blastholes. The proper planning in a large openpit mine is possible with this multivariate predictor.

8. No. of Research Publications:

- Papers in Journals: 20
- In conference proceedings: 15
- Invited lectures delivered: 07
- List of best 05 publications:
 - i. **Vivek Kumar Himanshu**, A. K. Mishra, A. K. Vishwakarma, M. P. Roy, P. K. Singh (2022). Explicit dynamics based numerical simulation approach for assessment of impact of relief hole on blast induced deformation pattern in an underground face blast. *Geomechanics and Geophysics for Geo-Energy and Geo-Resources*, 8:19. <https://doi.org/10.1007/s40948-021-00327-5> .
 - ii. **Vivek Kumar Himanshu**, A. K. Mishra, M. P. Roy, A. K. Vishwakarma, P. K. Singh (2021), “Numerical simulation based approach for assessment of blast induced deformation pattern in slot raise excavation”, *International Journal of Rock Mechanics and Mining Sciences*, 144, 104816. <https://doi.org/10.1016/j.ijrmms.2021.104816> .
 - iii. **Vivek Kumar Himanshu**, M. P. Roy, R. Shankar, A. K. Mishra, P. K. Singh (2021), “Empirical Approach Based Estimation of Charge Factor and Dimensional Parameters in Underground Blasting”, *Mining, Metallurgy & Exploration*, 38(2), 1059–1069. <https://doi.org/10.1007/s42461-020-00374-8> .
 - iv. **Vivek Kumar Himanshu**, A K Mishra, V. Priyadarshi, R. Shankar, R. S. Yadav, P. K. Singh (2021), “Estimation of optimum burden for blasting of different rock strata in an Indian Iron Ore Mine”, *Journal of the Geological Society of India*, 97, 760-66. <https://doi.org/10.1007/s12594-021-1757-4> .

- v. **Vivek K Himanshu**, M P Roy, A K Mishra, Ranjit K Paswan, Deepak Panda & P K Singh (2018), "Multivariate statistical analysis approach for prediction of blast induced ground vibration", Arabian Journal of Geosciences, Vol.11 No.16 pp 460. <https://doi.org/10.1007/s12517-018-3796-8>.

- Books/Chapters authored/edited: Book-01, Book Chapter-01

Vivek Kumar Himanshu, A. K. Mishra, M. P. Roy, P. K. Singh (2023). Blasting Technology for Underground Hard Rock Mining. Springer. ISBN-10: 9819926440; ISBN-13: 978-9819926442.

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

- Establishment of a Centre of Innovation & a Manufacturing Eco-System for Sensors (CIMES) in Industrial IoT (Project No. GAP/MEITY/125/2022-23).
- Estimation of charge factor for different rock strata of Bailadila Iron Ore Mine funded by M/s National Mineral Development Corporation Limited.
- Optimisation of blast design parameters for land development works for construction of 2 x 660 MW Obra-C Thermal Power Plant funded by M/s Baghel Infrastructure Pvt. Ltd.
- Optimization of Blast Design Parameters for Development and Stopping faces of Rampura-Agucha Mine for safe and efficient exploitation of mineral funded by M/s Hindustan Zinc Limited.
- Prediction of train induced vibrations in proposed high rise information technology park and data center building during movement of bullet trains funded by M/s Industrial Minerals and Chemical Company Private Limited, a subsidiary of M/s Tata Realty Limited.

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

Method for excavation of slot raise and rings simultaneously in underground stope using drilling and blasting [Patent application no. 0033NF2021].

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

- i. Technology for simultaneous extraction of slot raise and rings in underground blasting
- ii. Algorithm for estimation of charge factor and dimensional parameters for openpit and underground excavations using drilling and blasting
- iii. Technology for optimization of drilling and blasting pattern for excavation of underground drivages in metaliferrous mines
- iv. Methodology for prior prediction of ground vibration for green field mining projects using numerical simulation
- v. Methodology for prediction of train induced vibration using numerical simulation.

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

- SERB International Travel Grant-2023 for presenting a paper in ISEE 49th Annual Conference on Explosives & Blasting Technique, USA by Science and Engineering Research Board, Department of Science and Technology, Government of India.
- IEI Young Engineers Award-2022 from The Institution of Engineers (India).
- SERB International Travel Grant-2018 for presenting a paper in 12th International Symposium on Rock Fragmentation by Blasting (Fragblast 12) held at Lulea, Sweden by Science and Engineering Research Board, Department of Science and Technology, Government of India.
- Associate Member of the Institution of Engineers (India)
- Life Member of Mining Engineers Association of India
- Life Member of Mining, Geological and Metallurgical Institute of India
- Life member of Tunneling Association of India

12. Societal Contributions

- Onsite training to the miners of different mining organisations.
- Delivered a lecture to the participants of First Class Mines Manager Competency examination on drilling and blasting at Rajpura Dariba and Sindesar Khurd underground mine of M/s Hindustan Zinc Limited.
- Organised one-day workshop as Co-convenor on “Self Reliant India: Science and technology (SRISTY-2021)”.
- Guided B. Tech and M. Tech students from National Institute of Technology, Rourkela for their dissertation.

(Vivek Kumar Himanshu)