

Brief Bio-data

- 1 **Name:** Dr. Harsh Kumar Verma
2 **Date of Birth** 44 Yrs as on 2021
Current Position and Address Sr. Pr. Scientist and Head of Section
CSIR-CIMFR Research Centre
3 **Email ID** 27 Kholi, Vikas Nagar, Bilaspur (CG) 495001
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4. Educational qualifications:

Sl. No.	Degree	Year of Pass.	University/Institute	Subject
i	B.Tech.	1999	Govt. Engg. College, Bilaspur	Mining Engg
ii	M.Tech.	2007	VNIT, Nagpur	Mining Engg
iii	Ph.D.	2014	IIT Roorkee	Civil Engg

5. Work experience:

Designation	Institute /Company	From	To	Nature of Work
Research Fellow	NIRM, KGF	Nov. 99	Dec. 2001	Engg. Rock Blasting Division
Scientist B	CIMFR Roorkee Research Centre (Underground Space Technology and Geotechnical Engg.)	Dec. 2001	Dec. 2005	Worked in the area of Tunneling and Underground Space Technology, Underground Construction for infrastructures and strategic sectors
Scientist C		Dec. 2005	Dec. 2009	
Sr. Scientist		Dec. 2009	Dec 2013	
Pr. Scientist		Dec. 2013	Nov.2019	
Sr. Pr. Scientist & Head of Section	CIMFR Bilaspur Research Centre	Dec 2019	Contd.	Application of Rock Mechanics in Infrastructures and Strategic Project, National Mega Coal Quality Project

6. **Work Area(s)/ Specialization:** Geotechnical Engineering, Coal Geology and Characterisation, Underground Construction using NATM Approach, Rock Excavation Engineering, Blast induced Ground Vibration and Air Overpressure Study, Assessment of Damage Potential of Blast Induced Ground Vibration and Air overpressure

7. **Major contributions:** Contributed and still associated in following strategic project as technical consultant for underground construction and application of rock mechanics and rock engineering. I have contributed in areas of evaluation of tunnel support design and application of controlled blasting techniques for safe rock excavation in projects like (1) Rishikesh-Karnprayag Rail Link Project, (2) Navi Mumbai International Airport Project, Navi Mumbai, (3) Chenani-Nashari Highway Tunnel Project, (4) Udampur-

Srinagar Baramulla Rail Link Project, (5) Project DHARASTRAT of DRDO, (6) Defence Project, Vizag, & (7) THDC-Underground Hydro Power complex, Tehri

8. No. of Research Publications:

- Papers in Journals : 28
- In conference proceedings: 43
- Invited lectures delivered : 12
- **List of Major 05 publications**

- i. Verma, H. K., Samadhiya, N. K., Singh, M., Goel, R. K., Singh, P. K. (2018) Blast induced rock mass damage around tunnels. Tunneling and Underground Space Technology, 71(1):149 –158. <http://dx.doi.org/10.1016/j.tust.2017.08.019>
- ii. Verma, H. K., Goel, R. K., and Prasad, V. V. R. (2013) Assessment and Mitigation of Blast Induced Vibration and Overbreak in Kol Dam Hydroelectric Power Project, India – A Case Study. J of Rock Mechanics and Tunneling Tech., 19(1):47-59.
- iii. Verma, H. K. and Thote, N. R. (2013) Investigation of Delay Time Precision in Pyrotechnic Detonators. J. of Rock Mechanics and Tunneling Tech., 19(1):19-29.
- iv. Verma, H.K., Samadhiya, N.K., Singh, M., Prasad, V.V.R., and Goel, R.K. (2011) Quality Assurance in Construction Blasting. J of Engg. Geology, 37(1-4):373-381.
- v. Verma, H. K., Samadhiya, N. K., Singh, M., Prasad, V. V. R. (2014) Blast induced damage to surrounding rockmass in an underground excavation. Int. Jr. of Geological Resource and Engineering, 2(1):13-19.

Books/Chapters authored/edited:01

(Modelling of blast induced damage distance for underground Tunnel, , Lecture Norte series in Civil Engg: GeoIndus: Proceeding of Indian Geotechnical Congress, Series Vol. 133 (IGC-2019 Volume I), DOI: 10.1007/978-981-33-6346-5, Ed. S. Patel, 2021, Springer Singapore)

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

As project leader I have completed more than 50 industrial research project and submitted technical project reports. Major Ongoing Basic and Applied Research Project as Principal Investigator are listed below

- i. Development of guidelines for underground excavation using controlled blasting techniques by measurement of load-deformation response of rock mass vis-à-vis GRC and SRC(In-house Research Project)
- ii. Geotechnical Novel Solutions for Underground Infrastructures: Focused Basic Research Project of CSIR, jointly taken up with CSIR-CBRI Roorkee

- iii. Rock mass characterization and numerical modelling of slopes subjected to blast loading (Grant-in-Aid Project funded by Defense Terrain Research Laboratory, DTRL (DRDO) New Delhi)
- iv. Scientific study on Application of Controlled Blast Techniques for Underground Construction of Kalvadevi Metro Station using NATM Approach for UGC 02 of Mumbai Metro Line 3 (Package under HCC-MMS JV).
- v. Study on blast design optimization and evaluation of blast induced ground vibration during construction of Pump Storage Plant Project of THDC Tehri underground hydro power complex, Tehri (Applied Research Project Funded by THDC, Tehri)

10. Name of Patents/Copyrights applied /granted/commercialized:

Title of the invention: "A method for solid blasting in underground coal mines".
(Patent Application No.: 1538BEL2005 dated: 14.06.05)

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

- i. **CSIR Technology Award-(CTA-2018):** Awarded with prestigious CSIR-Technology award on the occasion of CSIR Foundation Day at New Delhi along with other colleagues of Rock Excavation Engineering Department, CSIR-CIMFR for contribution in infrastructure projects.
- ii. **Best Publication Award by ISRM TT:** Awarded with best Technical publication by Indian Society of Rock Mechanics and Tunneling Technology (ISRM TT) in the year 2016 under Rock Blasting and Rock Dynamics category for research paper in Journal of Rock Mechanics and Tunneling Technology.
- iii. **Outstanding Peer Reviewer of Elsevier Journals:** Received a certificate of appreciation as Outstanding Peer Reviewer of Elsevier Journals for contribution in review of research papers published by Elsevier.
- iv. **Expert Committee Member for NCR- Meerut Rapid Rail Transport System:** Appointed by Bharat Electronics Ltd. (Category A, Defense PSU, Ministry of Defense, Govt., of India) as an expert member for supervising the construction vibration related issues while undertaking construction works as a part of NCR-Meerut Rapid Rail Transport System passing through the BEL Premises at Ghaziabad.

12. Societal Contributions

My most noteworthy contribution in the present time having significance societal importance is Mega Coal Quality Project. Under this project, coal samples from loading ends of different mines are sampled as third party and results are submitted after carrying out various tests to determine the characteristics of the coal dispatched to

thermal power plants. As net results, quality of coal supplied to thermal power plant increased, specific coal consumption reduced and there is significant reduction in generation cost of electricity. Similarly contribution in various highway and railway tunnel project like Chenani-Nashari Tunnel, Goelkera-Mahadevsal Railway Tunnel Project, Mumbai Metro Project are also of significant societal importance.

(Dr Harsh Kr. Verma)