

Bio-Data of Dr. R. K. Goel

1. Name: **Dr. RAJNISH KUMAR GOEL**
2. Date of Birth: 15.06.1960
3. Current Position and Address
(with Email & Phone) Chief Scientist & Incharge
CSIR-CIMFR Regional Centre
CBRI Campus, Roorkee
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4. Educational Qualifications: (Graduation and above)

Sl. No.	Degree/ Certificate	Year of Passing	University/Institute	Subjects
i.	B.Sc.	1978	Lucknow	Physics, Maths & Geology
ii.	M.Tech.	1982	Univ of Roorkee, Now IIT Roorkee	Applied Geology
iii.	Ph.D.	1995	Nagpur/ VNIT	Mining Engg. (Tunnelling Technology)

5. Work Experience:

Designation	Institution	From	To	Nature of work
Research Fellow	CIMFR, Dhanbad	15.10.82	14.12.83	R&D and consultancy in the application of Rock Mechanics and Engineering Geology in the design of tunnels, underground space and rock slopes
Scientist B		15.12.83	14.12.88	
Scientist C		15.12.88	14.12.91	
Scientist EI		15.12.91	14.12.96	
Scientist EII		15.12.96	14.12.2001	
Scientist F		15.12.2001	14.12.2007	
Chief Scientist & Professor (AcSIR)		15.12.2007	Continue	

6. Area of Specialization:

Broad Area: Engineering Geology, Rock Mechanics and Geotechnical Applications in Tunnelling and Underground Space Technology and rock slopes

Sub-Areas

- Feasibility study for tunnelling and underground projects
- Rock mass classification and characterization
- Rock testing including testing under high temperature
- Design of tunnels and underground space including planning for hill development
- Design of tunnel supports and rock slopes
- Proof design check
- Underground instrumentation
- Rock mechanics & ground control problems of underground openings
- Retrofitting of tunnel
- Advise on tender preparations

7. Honours and Awards:

- i. Elsevier in cooperation with International Tunnelling Association issued a certificate of 'Outstanding Contribution in Reviewing' in Oct. 2014 to enhance the quality of Journal TUST.
- ii. ISRMTT Best Paper Award for the year 2013 for paper published in Journal of Rock Mechanics and Tunnelling Technology. The ISRMTT award was presented during the Indorock 2014 conference in Nov. 2014 at New Delhi.
- iii. ISRMTT Best Paper Award for the year 2012 for paper published in Journal of Rock Mechanics and Tunnelling Technology. The ISRMTT award was presented during the Indorock 2013 conference in May 2013 at JUIT, Solan.
- iv. IIT Roorkee Gopal Ranjan Research Award 2012 for Innovative and Creative work in the field of Geological and Geotechnical Applications in Tunnelling and Underground Space technology in India. Award conferred on Aug. 4, 2012 during the annual convocation of IIT Roorkee.
- v. ISRMTT Award for Outstanding Contribution to Rock Mechanics for the year 2007, presented in the Inaugural function of Indorock 2011, Oct. 13, 2011, Roorkee.
- vi. Commendation Certificate by CIMFR for filing of Patent on Device to Measure Lateral Deformation of Rock in a Heating Chamber Coupled to an Universal Testing Machine in the year 2007-08.
- vii. Highly prestigious National Mineral Award – 2004 (now known as National Geoscience Award) in the field of Applied Geology (Engineering Geology). Awarded by Ministry of Mines, Govt. of India. The award carries Cash prize, Trophy and Certificate.
- viii. IGS-HEICO Biennial Prize for the Best Paper on "Rock Mechanics" Published in the Indian Geotechnical Journal for the Year 2001-2002.
- ix. Khosla Annual Research Prize of University of Roorkee, India for the year 1999
- x. Khosla Annual Research Prize of University of Roorkee, India for the year 1998
- xi. CMRI Annual Award for the third best Technical paper published in an International Journal between September 1997 and August 1998.
- xii. CSIR Golden Jubilee CMRI - Whitaker Annual Award for outstanding achievements in 1996.
- xiii. Smt. Indira Joshi award for the best paper in 1986 by Indian Geotechnical Society (IGS), India.

8. Fellowships/Scholarships: Not Any

9. No. of Research Publications:

Papers in journals: 33
In conference proceedings: 111
Invited/key-note addresses: 87

List of best 05 publications:

- i. Goel, R. K., Jethwa, J. L. and Paithankar, A. G. (1995). Indian Experiences with Q and RMR systems, J. Tunnelling and Underground Space Technology, USA, Vol. 10, No. 1, pp. 97-109.
- ii. Goel, R. K., Jethwa, J. L. and Dhar, B.B. (1996). Effect of tunnel size on support pressure, Technical Note, Int. J. Rock Mech. Min. Sci. & Geomech. Abstracts, Vol. 33, No.7, pp. 749-755, UK.
- iii. Singh, Bhawani, Goel, R.K., Mehrotra, V. K., Garg, S. K., and Allu, A.R. (1998). Effect of Intermediate Stress on Strength of Anisotropic Rock Mass, Tunnelling and Underground Space Technology, USA, Vol. 13, No. 1, pp. 71-79.
- iv. Lokajiček, T., Rudajev, V., Dwivedi, R. D., Goel, R.K. and Swarup, A. (2012). Influence of Thermal Heating on Elastic Wave Velocities in Granulites, Technical Note, Int. J. of Rock Mechanics and Mining Sciences, Sept., Vol. 54, pp.1-8.
- v. Goel, R.K. (2014). Tunnelling through weak and fragile rocks of Himalayas, International Journal of Mining Science and Technology, Elsevier, Vol. 24, pp.783-790.

10. Number of Books authored: 05

- i. Rock Mass Classifications - A Practical Approach in Civil Engineering" with Prof. Bhawani Singh, Dept. of Civil Engineering, University of Roorkee (now IIT Roorkee), Roorkee, India published by Elsevier Science Ltd.
- ii. Co-authored book on "Software for Engineering Control of Landslides and Tunnelling Hazards" with Prof. Bhawani Singh, Dept. of Civil Engineering, Indian Institute of Technology Roorkee, Roorkee, India and published by A.A.Balkema (Swets & Zeitlinger), The Netherlands in October 2002.
- iii. "Tunnelling in Weak Rocks" – Written with Prof. Bhawani Singh. Published by Elsevier Ltd. U.K. in June 2006 under its Geo-Engineering Series, Series Editor, Prof. John A. Hudson.
- iv. "Engineering Rock Mass Classification: Tunneling, Foundations and Landslides" – Written with Prof. Bhawani Singh. Published by BH Elsevier Inc., USA in July 2011. The Book has been translated in Korean language in 2014 by Bestun Korea Agency, S. Korea.
- v. "Underground Infrastructures: Planning, Design and Construction" – written with Prof. Bhawani Singh and Prof. Jian Zhao, Switzerland. The book is published by BH Elsevier Inc., USA in May 2012.

11. (a) No. of Patents granted: 03

(b) Technologies developed, Licensed and/or commercialized: Not Any

12. Foreign visits:

Place, Country	Duration	Purpose
Lake Tahoe, USA	June 1-10, 1995	35 th US Symposium on Rock Mechanics - Presented a paper. Visit partly sponsored by Symposium Organisers
Seoul, S. Korea	Oct. 11-18, 1997	First Asian Rock Mechanics Symposium - Presented a paper and co-chaired a Technical session. Visit sponsored by M/s SKEC, Seoul
Stockholm, Sweden	Oct. 19-26, 1997	Member of Indian delegation to visit Underground Oil and LPG installations - visit sponsored by SKANSKA
Kuala Lumpur, Malaysia	Aug. 24-28, 1998	2 nd Asia Tunnelling Summit - Presented a paper. Visit sponsored by IBC Asia Ltd., Singapore
Singapore	Aug. 28-30, 1998	To visit School of Civil & Structural Engineering, Nanyang Technological University and delivering a lecture on an invitation from Prof. Zhao Jian
Singapore	June 28 - Aug. 22, 1999	Went on an assignment as a Visiting Fellow in NTU to work on Underground Science City Project
Ostrava & Prague, Czech Republic	May 7-27, 2001	To work on collaborative project under bilateral program of CSIR and Academy of Sciences of Czech Republic
Ostrava & Prague, Czech Republic	March 25-April 14, 2004	To work on collaborative project under bilateral program of CSIR and Academy of Sciences of Czech Republic
Singapore	April 4 – May 3, 2005	One months' Fellowship under NTU-UTRE Program on Underground Space Development
Singapore	Nov., 2006	To attend 4 th Asian Rock Mechanics Symposium; Chaired a Technical session; Delivered lecture in a course on Underground Space Technology
Prague, Czech Republic	May 2 to 14, 2007	To work on a collaborative project and to attend World Tunnel Congress; Co-chaired a Keynote session

Washington, USA	Aug 11 to 16, 2008	Attend 6 th International Conference on Case Histories; <i>Co-chaired a Technical session</i>
Switzerland	June 1 to 30, 2009	Visiting Fellow, LMR-EPFL, Lausanne
Tehran, Iran	Oct. 31 to Nov. 4, 2011	To attend First Asian and 9 th Iranian Tunnelling Symposium and to deliver keynote paper on "Experiences and challenges of tunnelling"
Beijing, China	June 4 to 9, 2014	To attend International Symposium on Soft Rocks (ISSR 2014). Deliver keynote paper and Chaired a Technical Session

13. Details of Professional Memberships:

- * Life Member - International Society for Rock Mechanics (ISRM) from 2001
- * Life Member - International Tunnelling and Underground Space Association (erstwhile ITA) from 2001
- * Life Member - Association of Geoscientists for International Development (AGID) from 1998
- * Life Member - Indian Geotechnical Society (IGS) from 1986
- * Life Member - Indian Society of Engineering Geology (ISEG) from 1991
- * Life Member - Indian Society of Rock Mechanics & Tunnelling Technology (ISRMTT) from 1994
- * Life Member - Institution of Geoscientists, India (IGI)
- * Life Member - Indian Society of Rock Mechanics & Ground Control (ISRMGC)
- * Life member – Indian Geological Congress (IGC) from 2015
- * Member - International Association of Engineering Geology (IAEG) for one year
- * Member - Executive committee of Indian Society of Rock Mechanics & Tunnelling Technology (ISRMTT)
- * Member - ISRM Commission on Case Histories in Rock Engineering (CCHRE)
- * Vice-President of International Society for Rock Mechanics, ISRM (India), 2011-14. Again given the responsibility for the term 2012-2015.
- * Worked as Vice President of ISRMTT main body from 2009-2011.
- * Worked as President, ISRMTT Roorkee Chapter for the term 2010-2012.
- * Principal Member, Bureau of Indian Standards (BIS) Sectional Committees CED 48 on "Rock Mechanics", CED 56 on "Hill Area Development" and WRD 05 on "Geological Investigations and Subsurface Explorations" of Bureau of Indian Standards (BIS), New Delhi, India

14. Major contributions: (Max. 150 words)

Worked on more than 60 tunnelling and mining projects including the projects of strategic importance of Ministry of Defense on underground shelters, underground storage of oil and LPG, underground civic facilities like metro, underground nuclear waste repositories, tunnelling for hydroelectric projects, rail and highway tunnels, and developed new tunnelling technologies and correlations for design of tunnels through varying and challenging weak and fragile rock masses. He developed and patented geotechnical Instruments, which helped in saving of foreign exchange.

In pursuit to disseminate the technologies, impart knowledge and expertise his contributions include (i) preparation of seven Bureau of Indian Standard Codes, (ii) 140 research papers/articles in national and international reputed journals and conference proceedings, (iii) organized number of conferences and seminars, (iv) organized short-term courses for field engineers and geologists, (v) delivered about 87 invited lectures to practicing engineers, contractors and (vi) written five books published by Elsevier and Balkema. His work on 'Tunnels in the Himalaya' has been internationally recognized and being published as a chapter in the book on 'Rock Mechanics and Rock Engineering' edited by Prof. Xia-Ting Feng and Prof. Hudson.

15. Technologies and Products/ Services :

Developed tunnelling techniques for estimation of ground condition, support pressure and closure in tunnels. The techniques are available in terms of equations and correlations in various publications and are being used in the design of tunnels globally.

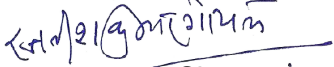
Developed: Not Applicable
Licensed: Not Applicable
Commercialized: Not Applicable

16. Designs and Prototype Developed: Not Any

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

Most of the awards listed above in Item no. 7 are the results of tunnelling and underground space design technology developed by Dr. Goel.

Date: 31.5.2016


Signature
(R.K.Goel)