

## Bio-Data of Dr. J. K. MOHNOT

1. Name: **DR. JAGDISH KUMAR MOHNOT**
2. Age as on 1.1.2016: 51 Years
3. Current Position and Address with Email & Phone: **Chief Scientist (Mining & Tunnelling)**  
Central Institute of Mining & Fuel Research  
CIMFR Regional Centre, CBRI Campus  
**ROORKEE-247 667 (Uttarakhand) India**  
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4. Educational Qualifications: (Graduation and above)

**B.E. (Mining), M.S. (S&T), F.C.C. (Unrestricted Metal Mine), Ph.D. (Mining), FIE**

Degree / Certificate	Class/Grade	Year	Institute / University
<b>B.E. (Mining)</b>	1 <sup>st</sup> with Fourth Rank	1988	M.B.M. Engg. College University of Jodhpur Presently JNV University Jodhpur (Raj.) India
<b>M.S. (Sc. &amp; Tech.) with Dissertations in Mining</b> 'Sponsored by CSIR'	Distinction CGPA 9.14	1992	Birla Institute of Technology & Science (BITS), Pilani, (Raj.)
<b>F.C.C. (Opencast &amp; Underground):</b> Metalliferous Mine Manager's First Class Certificate of Competency	1 <sup>st</sup> Class Certificate	1996	Board of Mining Examinations Directorate General of Mines Safety (DGMS), Dhanbad
<b>Ph.D. (Mining Engg.) #</b>	Degree Certificate	2003	Indian School of Mines Presently IIT Dhanbad
<b>FIE: Fellow of Institution of Engineers (Mining)</b>	Certificate	2005	The Institution of Engineers (India), Kolkata

# **Ph.D. Thesis:** "Formulation of Optimum Investment Decision Model for Economic Evaluation of Mining Venture"

5. Work Experience: Total **27 Years** Service Experience in Mining & Tunnelling

Institution	Designation	Period	Nature of Work
Central Institute of Mining and Fuel Research (Erstwhile CMRI), Regional Centre, (CSIR, Govt. of India) CBRI, IIT Campus ROORKEE-247 667 (Uttarakhand) India	Chief Scientist & Professor	26/12/13- Continue	Research & Consultancy in the areas of Mining & Mine Planning, Blasting, Slope Stabilisation, Underground Space for Storage of Petroleum Products and Tunnelling Technology for Hydro, Highway & Railways.
	Sr. Principal Scientist	26/12/08- 25/12/13	
	Scientist-EII	26/12/03- 25/12/08	
	Scientist-EI	26/12/99- 25/12/03	
	Scientist-C	26/12/94- 25/12/99	
	Scientist-B	26/12/89 - 25/12/94	
Pyrites, Phosphates & Chemicals Ltd. (Govt. of India U.T.) DEHRADUN-248001	Asst. Manager (Mines)	18/6/88 - 25/12/89	Mine Production, Planning, Safety and Management

6. Area of Specialization: **Mining & Tunnelling**

- **Tunnelling:** Tunnelling for (i) Large Hydro-Electric Projects of State Govts., NTPC, NHPC, SSJV, L&T and HCC (including underground De-silting Chambers, Gate & Surge Shafts, Power House and various tunnel construction), (ii) 9.0 km long Highway Tunnels of NHAI in J&K and (iii) Railway Tunnels in Assam (longest 3.0 km).
- **Underground Space:** New Applications of Mining for Economic Planning, Design & Development of Underground Space Technology in India for the first time since year 1993 (for Defence Shelters, Nuclear Waste Repository-BARC and Underground Storage of LPG & Crude Oil at Vizag - OADB/ ISPRL/ IOTL & HPCL).
- **Slope Stabilisation** for ISPRL Project of IOTL (2.0 km long slopes in Vizag).
- **Metalliferous Mining** Technology including Environmental Protection (PPCL, FGML)
- **Mine Planning** for Rock Phosphate, (PPCL), Potash (IGRL), Rare Earth (CSL)

7. Honours and Awards:

The prestigious **National Mineral Award-2004** in the field of **Mining Technology** for mining specialized works in the areas of (a) Mine Planning and Mine Economics (b) Underground Space for LPG & Crude Oil and Tunnelling including Hydroelectric Projects as New Applications of Mining Technology for large Civil Engineering Projects and (c) Metalliferous Mining Technology including Environmental Protection. The national award was presented on 8<sup>th</sup> March, 2006 at Vigyan Bhawan, New Delhi by Hon'ble Minister of Mines, Govt. of India.

8. Fellowships / Scholarships:

CSIR Sponsored for M.S. (S&T) with two Dissertations in Mining Engineering, BITS, Pilani.

9. No. of Research Publications:

Papers in journals : 7

In conference proceedings : 27

Invited/key-note addresses : 15

List of best 05 publications :

- i. Mohnot, J. K. and Dube, A. K. (1991). "Mineral Exploitation and Environment in Himalayan Mining Region", Proceedings of **International Conference** on Mineral Development & Environment, ISM, Dhanbad, Nov. 28 - 30 and republished in **Book** on '**Recent Researches in Geology** - Vol. 15', Hindustan Publishing Corp. (India), New Delhi.
- ii. Mohnot, J. K., Dwivedi, R. D. and Dube, A. K. (2000). "Tunnelling in Rock of Highly Squeezing Behaviour", International Tunnelling Association's Commemorative **Book** on '**Tunnelling Technologies for the 3<sup>rd</sup> Millennium**' Published by Bertelsmann Fachzeitschriften GmbH, Gutersloh, **Germany**, May.
- iii. Mohnot, J. K., Singh, U. K. and Dube, A. K. (2001). "Formulation of a Model for Determining the Optimum Investment, Operating Cost and Mine Life to achieve Planned Profitability" **International Transactions** of the Institute of Mining and Metallurgy (Section-A: Mining Technology ), U.K., Vol. 110, May - Aug.
- iv. Mohnot J.K., Prasad V.V.R. and Verma H.K. (2005). Investment Opportunities for Potash Mining in India as an Import Substitute Mineral. Proceedings of 1<sup>st</sup> Indian Mineral **Congress & Exhibition** "Showcasing Mineral Industry in 21<sup>st</sup> Century - IMC 2005" organised by ISM Alumni Association, CMRI and DGMS, Dhanbad, Feb.28 - March 1. (**Online paper referred more than 1100 times**).
- v. Mohnot, J. K. and Singh, U. K. (2014). 'OPTMINEINVEST'- A Model for Optimum Mine Investment Decision. **International Journal** of Engineering Science and Innovative Technology, Florida, USA, Vol.3, Issue 2, pp. 350-57.

10. Number of Books authored: Chapter / Papers in 3 Books

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

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

Technology for Underground Storage of Crude Oil & Petroleum Products in India and developed the legislative guideline and safety standards required in Indian context for construction of first of its kind strategic facility in our country as Underground LPG Storage Project of HPCL at Vizag during 1998-99. Also contributed for development of Underground Crude Oil Storage strategic facility of ISPRL at Vizag during 2010-15.

12. Foreign visits:

- (a) Deputed to Hydro Project Institute, **Moscow**, Russia from Oct. 30 to Nov. 8, 1996 under **ILTP programme of Department of Science & Technology**, Govt. of India, New Delhi.
- (b) Deputed to **Czech Republic** from Sept. 24 to Oct. 24, 1997 under bilateral exchange programme of **CSIR-India** and **Academy of Sciences of the Czech Republic**. Visited the Institute of Geonics, **Ostrava** and Institute of Computer Sciences, **Prague** and presented a paper on "Underground Storage Techniques of Petroleum Products", Intl. conference of ITA at **Prague**. Visited metro construction at **London** for case study.
- (c) Deputed to **Czech Republic** from 1<sup>st</sup> to 21<sup>st</sup> Oct., 2007 under bilateral exchange programme of **CSIR-India** and **Academy of Sciences of the Czech Republic**. Visited the Institute of Geonics, **Ostrava**, Institute of Computer Sciences and Institute of Geology (Lab. of Rock Physical Properties), **Prague**. Delivered the **lectures** on 'Tunnelling in India' and "Scientific Approach for Mining in India" on Oct. 11, 2007 at Geonics. Visited metro construction at **Paris** for case study.

13. Details of Professional Memberships:

- Founder Life Member, Indian Society for Rock Mechanics and Tunnelling Technology (ISRMTT), (1992).
- Member, The Mining, Geological & Metallurgical Institute of India, (1997).
- Life Member, International Society for Rock Mechanics (ISRM), (1997).
- Member, Bureau of Indian Standards, Rock Mechanics Committee (2001).
- Life Member, MBM Engg. College Alumni Association, Jodhpur (2004).
- Fellow & Executive Member (Roorkee Chapter), The Institution of Engineers, (2005).

14. Major contributions:

Excellent **application-oriented R&D** contributions and significantly completed about **50 Research & Consultancy Projects** on **Mining, Underground Space for Storage of Strategic LPG & Crude Oil (Vizag), Tunnelling Technology for Highways (J&K), Railways (Assam) & Hydroelectric Projects (Uttarakhand, Himachal)** and **Collaborative Projects** with Czech Republic & Russia. The field-wise contributions are as follows:

(a) **Mine Planning & Mine Economics:**

As a Ph.D. research work, development of optimum investment decision model with computer program for economic evaluation of mining venture. This unique new mathematical planning tool with computer program contributes for the quick and economic planning of mining venture. Developed the correlations between (i) optimum mine investment and revenue (ii) optimum mine operating cost and revenue. The model provides the values of key economic parameters in terms of revenue; therefore it enhances its worldwide application for all type of minerals. The work was published in IMM Transactions (Mining Tech.), U.K.

(b) **Metalliferous Mining Technology:**

- Development of expertise and scientific design of stope panels for rock phosphate mining in complex rock formations of PPCL mines for about ten years duration, which contributed a lot for successful mining of import value mineral.
- Assessment & Mitigation of Ground Vibration & Air Overpressure by Optimum Blast Design at Khori and Sirohi Opencast Quartzite Mines, M/s Faridabad Gurgaon Minerals.
- Presently working on new area to attend the national need of Make in India for (i) “Deep Seated Mining of Potash in Rajasthan as Import Substitute Fertilizer Mineral” to save annual foreign exchange of approx. Rs.10,000 Crores towards import of Potash, and (ii) Underground Mining of Non-Radioactive Rare Earth Elements Minerals in Rajasthan. The MoUs are signed with Indic Geo Resources Pvt. Ltd. (IGRL) and Chandan steel Ltd.

(c) **Underground Space Technology and Tunnelling:**

- First time in India, application-oriented development of Underground Space Technology for various applications such as storage of LPG (HPCL), Crude Oil and Petroleum Products (ONGC), Nuclear Repository (BARC), Underground Shelters (Defence).
- With the experience of FCC, worked out the ‘Legislative Aspects and Safety Standards’ required in Indian context for the construction of underground LPG storage facility at Vizag for the first time in India.
- Contributed for stabilisation of 2 Km long surface slopes with various methods and site specific design as per rock-soil condition, shaft supports and spillway construction in caverns for creation of 1.3 Million Tonne underground strategic crude storage facility of ISPRL for the first time in India at Vizag since commencement of the project work during 2010-15.
- International scientific collaborative projects in the field of tunnelling and underground space technology with Russia and Czech Republic.
- Controlled blasting technique applied for development of three large Desilting Chambers at Loharinag Pala Hydro Power Project, HCC / NTPC, Uttarkashi and other projects.
- Undertaken the longest highway tunnel of India with 9.0 km length located in J&K state for project of CNTL, (ITNL-ILFS) / NHAI on Jammu - Srinagar highway, near Patnitop with hill cover of 1 km. The work involves tunnel design and geotechnical investigations during construction of 2-Lane main highway tunnel with a parallel escape tunnel in varying Himalayan rock formations. Technical expertise provided in terms of the design of tunnel supports and other tunnelling problems. Achievement of safe and faster rate of tunnelling for both main & escape tunnels using NATM with solution for various challenging field problems and the tunnel is made through.
- Northeast Frontier Railway (Govt. of India) has been benefitted by the valuable suggestions for tunnelling in difficult ground conditions by changing shape of opening, optimum support systems and use of latest drill machines for faster advance of the tunnels. The broad gauge train from Silchar to Lumding connecting to Guwahati, Assam commenced in Nov., 2015 through our contributed tunnels (longest rail tunnel 3.0 km).

Date: 6.6.2016, Roorkee

(Dr. J. K. Mohnot)

Dr. J.K. Mohnot, CIMFR Regional Centre, Roorkee, Bio-data Dt.6.6.2016 (5/5)