

BIODATA

1. Name : Dr. Debashish Sengupta
2. Designation : Professor (H.A.G.)
3. Department : Geology and Geophysics
4. Institution : Indian Institute of Technology, Kharagpur 721 302
5. Date of Birth : 31.12.1957
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11. Educational Qualifications:

Name of College/University	Examination Passed	Year of Passing	Subjects	Class/Division
CBSE, New Delhi	Higher Secondary	1974	Physics, Chemistry, Mathematics, Biology and English.	First
University of Rajasthan, Jaipur	B.Sc.(Hons.)	1977	Mathematics (Hons.), Physics and Chemistry.	First
University of Rajasthan, Jaipur	M.Sc.	1979	Applied Physics	First, Seventh position in the State
Physical Research Laboratory, Ahmedabad	Ph.D.	1987	Applied Geophysics	-

12. Professional Experience/Training:

- (i) Extensive research work undertaken using Luminescence Dating Systems like TL and ESR. Radiometric Prospecting and Radon Emanometric in-situ surveys using portable radiometric and radon counters and SSNDT's (Solid State Nuclear Track Devices) specially in the Singhbhum shear zone, Jharkhand and southern coast of Orissa. Radiometric assaying using NaI(Tl) and HPGe gamma ray spectrometers coupled to multichannel analyser systems and multi-elemental analysis using Atomic Absorption Spectroscopy.
- (ii) Participated in a work experience programme in "Electronics instrumentation" sponsored by the University Grant Commission, New Delhi, during November 1976-December 1977.
- (iii) Attended the summer school "Solar Systems 1980" conducted by Prof. T. Gehrels of University of Arizona, U.S.A. held at Physical Research Laboratory, Ahmedabad, during August 1980 and completed the course with credit.

13. Post-doctoral Research/Training Experience:

Duration	Institution	Designations	Nature of work
August 1986 - August 1988	Physical Research Laboratory, Ahmedabad	Post-doctoral Fellow	Thermoluminescence studies to unravel the palaeoclimates in Antarctica and South Asia.
September 1988 - September 1989	I.I.T. Kharagpur	Institute Research Associate	Teaching and research on applications of Nuclear Geophysics and Radioactive Methods and Geochronology in Earth Sciences.
October 1989 - November 1990	I.I.T. Kharagpur	C.S.I.R. Pool Officer	Same as above.
November 1990 - December 1993	I.I.T. Kharagpur	Lecturer	Teaching and research on application of Radionuclides, Isotopes and Radiation Dosimetry in Earth and

			Environmental Sciences.
Duration	Institution	Designations	Nature of work
January 1994 - 2 nd May 1999	I.I.T. Kharagpur	Assistant Professor	Same as above.
3 rd May 1999 - 9 th June 2003	I.I.T. Kharagpur	Associate Professor	Applications of nuclear geophysics for various applications including Petroleum (logging) exploration.
10 th June 2003 till to-date	I.I.T. Kharagpur	Professor	Same as above.
15 th September 2009 till to-date	I.I.T. Kharagpur	Professor Higher Academic Grade	Same as above.
1 st January 2013 - 31 st December 2015	I.I.T. Kharagpur	Head of the Department	Administration and same as above.

14. Awards and prize (s) won:

- (i) Winner of the Principal Medal for the year 1978-79 for the best performance in academic and cultural fields at Government College, Ajmer, Rajasthan.
- (ii) Awarded a Visiting Professorship at the Department of Nuclear Physics, University of Sao Paulo from 15th July 1996 to 14th July 1997, which was supported by Fundacao de Amparo a Pesquisa do Estrado de Sao Paulo, Brazil, Undertaken research work on “Applications of Thermoluminescence Dating and Gamma-Ray Spectrometry in Earth and Environmental Sciences.” During this period I was also actively involved in the upgradation of the Luminescence Dating Laboratory at the University of Sao Paulo, Brazil. Subsequently I had an active collaboration with the Institute at Sao Paulo on geophysical applications, specially in terms of modeling of radiometric data.
- (iii) The paper “Environmental impact of the coal based thermal power plant at Kolaghat, West Bengal presented by us at the National Seminar on Mineral Based Industries, Present Status and Future Prospects, 5th-7th December 2001, Visakhapatnam, received the Best Paper Award.
- (iv) I was presented the Society of Geoscientists and Allied Technologists (SGAT’s) Award of Excellence in Earth Sciences for the year 2003 on 20th December 2003.

15. Visits abroad:

- (i) Attended the “**Fourth International Specialist Seminar on TL and ESR Dating**”, held at Worms, Germany from 24th September-28th September, 1984 and presented the paper in the same.
- (ii) Visited Max-Planck Institute fur Kernphysik, Heidelberg, Germany. September, 1984 for scientific discussions and future research programmes.
- (iii) Visited Cambridge University, Sub-department of Quaternary Research and Research Laboratory for Archaeology, Oxford University, October-November 1984 for scientific discussions and future research programmes.
- (iv) Visited the Department of Nuclear Physics, University of Sao Paulo, Sao Paulo, as a Visiting Professor from July 1996-July 1997.
- (v) Visited and presented a paper at the “**International Symposium on Engineering Geology, Hydrogeology and Natural Disasters with special emphasis on Asia**”, held at Kathmandu, Nepal, 28th-30th September 1999.
- (vi) Visited and presented two papers at the Seventh International Symposium on “**Natural Radiation Environment (NRE – VII)**”, Rhodes, Greece, 20 –24 May 2002.
- (vii) Presented two papers at the **1st Workshop on “Natural Radionuclides in Hydrology and Hydrogeology (NURAHYD-1)**”, Luxembourg, 4th Sept. - 7th Sept. 2002.
- (viii) Presented a paper at the International Conference on “**The role of natural resources and environment in sustainable development in south and southeast Asia**”, Dhaka, Bangladesh, January 17-21, 2003.
- (ix) Presented a paper at the “**6th International Conference on High Levels of Natural Radiation and Radon Areas**”, Osaka, Japan, September 6-10, 2004 and also presented an Invited Talk at the Department of Geology, City University of Osaka, Japan.
- (x) Department of Applied Physics, Faculty of Experimental Sciences, University of Huelva, Spain (6th May 2006 to 6th August 2006). Purpose: To undertake research work on Modeling of Environmental Radioactivity.
- (xi) Presented an Invited Talk on “Environmental geochemistry-recent studies from the Indian subcontinent”, at the **XVII Congreso Nacional de Geoquímica (INAGEQ-2007)**, Universidad Autonoma Del Estado De Hidalgo, Pachuca, Hidalgo, Mexico, 1st October – 6th October 2007.

- (xii) I was invited to attend and actively participated in the **TOTAL Energy and Education Seminar**, held in Paris, France which was sponsored by Universite Total, France, from November 25-29, 2007.
- (xiii) I visited the Department of Fundamental Physics, Division of Environmental Radioactivity, University of Salamanca, Spain, as a Senior Visiting Professor, on a sabbatical leave from I.I.T. Kharagpur from February 2009 to June 2009. I also delivered an Invited Talk at the University of Salamanca, Spain on 26th May 2009.
- (xiv) Delivered two Invited Talks at the 10th International Workshop on the Geological aspects of Radon Risk Mapping held at Prague, Czech Republic, September 20th-25th 2010.
- (xv) Invited to deliver the plenary/key note address at the First International Conference on Development for Rare Earths-Advances in mining, Separation, Extraction and Application” held at Baotou, Peoples Republic of China from July 15-20, 2014.

16. Research specialisation (major scientific field(s) of interest):

Nuclear Geophysics including petroleum logging using subsurface nuclear data, Radioactive Methods and Geochronology, Radon Emanometry and its applications, Applications of Isotopes and Radionuclides in Earth & Environmental Geosciences, Heat Flow and Geothermics, Exploration and Extraction of Rare-Earth's, NAPL contamination due to hydrocarbon reservoirs.

17. Research and development:

- (i) Established reliable and low level radiometric prospecting and assaying facilities using Geiger and Scintillation detectors. A four channel gamma ray spectrometer coupled with a personal computer is being routinely used for estimating uranium, thorium, radium and potassium in soils and rocks. Presently involved in nuclear well logging applications for Petroleum Exploration. New methodology adopted for enhanced reliability and its efficacy in different geological environments. Application of radon emanometry using Solid State Nuclear Track Devices (SSNTD's) and portable gamma ray spectrometry for studies on radiometric modeling and long distance migration of radionuclides, and for radon transport and transfer pathways coupled to radon emanation or radon exhalation rate measurements. Undertaken extensive geophysical and radiometric studies on modelling of radon as a geophysical precursor for studies on passive and active faults and in understanding the nature of groundwater aquifers and in water resources management.
- (ii) Established the high sensitivity laboratory for “Measurement of Radionuclides and Radon and Modelling” with its applications to quantification of **NORM** (Naturally Occurring Radioactive Materials) and **TENR** (Technologically enhance natural radiation). The aforesaid facility is being utilized for Exploration and Extraction of Rare Earth Resources, Remediation of the Mining Environment, Use of Clean/Environmentally sustainable Energy Resources to name a few.

Teaching:

I have been teaching the following courses in Department of Geology and Geophysics at the Indian Institute of Technology, Kharagpur, West Bengal, India for the last twenty five years: Nuclear Geophysics and its Applications, Radioactive Methods of Prospecting, Energy Resources, Physics of Solid Earth, Experimental Techniques in Geosciences.

18. Other Distinctions:

- (i) Successfully organized the First National Symposium on “Challenges and Excitements in Science for Youth” Sponsored by the Department of Science and Technology, New Delhi and held at Physical Research Laboratory, Ahmedabad from 12th – 15th February 1987. I was the Chief Editor of the Conference Proceedings, published in June 1987.
- (ii) Assisted in the organization of the International Symposium on Deep Electromagnetic Exploration and the workshop on Marine Electromagnetic Induction as a Steering Committee and Publication Committee Member held at IIT Kharagpur from 13th – 16th January 1991.
- (iii) I was a Course Coordinator for the **AICTE** Sponsored Quality Improvement Programme for the Short Term Course in **Solid and Hazardous Waste Management** held at IIT Kharagpur from August 13-17, 2007.
- (iv) I have been actively involved with organising and conducting the Earth Science Quiz competitions of the Earth Science Study Circle, IIT Kharagpur for the past one-decade.
- (v) I was the Principal Course Co-ordinator of the **AICTE** sponsored Quality Improvement Programme (QIP) Short term Course on Solid and Hazardous Waste Management conducted at IIT Kharagpur West Bengal from 12th-19th November 2010.

19. Membership of Professional Institution/Bodies:

- (i) Nominated as Life Member of Association of Exploration Geophysics, Osmania University, Hyderabad, India.
- (ii) Nominated as Life Member of the Indian Science Congress Association, Calcutta and Member, Sociedade de Fisica, Brazil.
- (iii) Nominated as Member of the International Organizing Committee of the “International Symposium on Defects Related Processes in Insulators”, Campos de Jordao, Brazil, July 1997.

- (iv) Nominated as the Life Member of the Indian Association for Radiation Protection, Mumbai, India.
- (v) Nominated as the Life Member of the Association of Geoscientists for International Developments (AGID).
- (vi) Nominated as the Life Member of the Society of Geoscientists and Allied Technologists, Bhubaneswar, Orissa, India.
- (vii) Nominated as Member “Nuclear Track Society of India” of the Radiation Safety Systems Division, B.A.R.C., Mumbai, India.

20. International/National Collaborations :

Collaborative research work has been initiated with the following Institutes:

- (i) Variable Energy Cyclotron Centre, Kolkata
- (ii) Saha Institute of Nuclear Physics, Kolkata
- (iii) Institute of Physics, Bhubaneswar
- (iv) Kernfysisch Versnelles Institute, Groningen, Netherlands
- (v) Environmental Assessment Division, B.A.R.C., Trombay, Mumbai.
- (vi) Department of Geological Sciences, University of Vienna, Austria
- (vii) Department of Earth and Planetary Sciences, University of New Mexico, Albuquerque, U.S.A.

21. Supervision of M.Sc. Dissertations at IIT Kharagpur

- (i) “Analysis of Gamma-Ray Data for Exploration of Radioactive Deposits” submitted by Mr. Anand Rao Kalvey of M. Sc. (Fifth year, Exploration Geophysics) in June, 1991.
- (ii) “Application of Wiener Least – Square Filters for Delineation of Radioactive Ore – Bodies” submitted by Mr. Ramesh Chandrasekhar of M. Sc. (Fifth year, Exploration Geophysics) in June, 1992.
- (iii) “Analysis of Surface Gamma Ray data and their attenuation for delineation of deeper radioactive mineralizations” submitted by S. Mitra of M. Sc. (Fifth year, Exploration Geophysics) in June 1993.
- (iv) “Radiometric Studies in parts of the Singhbhum Shear Zones” submitted by Mr. Amitava Ghosh M. Sc. (Fifth year, Applied Geology) in June 1994.

- (v) "Geology and Radiometric analysis in and around Beldih, Purulia District, West Bengal" submitted by S. Bhattacharya of M. Sc. (Fifth year, Applied Geology) in June 1994.
- (vi) "Geochemical and Radiometric analysis of ore mineralization in Pathargorah and Surda Mines, Singhbhum District, Bihar" submitted by S. Dutt of M. Sc. (Fifth year, Applied Geology) in May, 1995.
- (vii) "Flow and diffusion of radon isotopes in soils and rocks of the Singhbhum Shear Zone, Eastern India" submitted by V. Singh of M. Sc. (Fifth year, Applied Geology) in May 1995.
- (viii) "Groundwater characteristics around Haldia, with special emphasis on Radioactivity Measurements" submitted by Ms. Suparna Pal of M. Sc. (Fifth year, Applied Geology) in May 1996.
- (ix) Informal supervision of B. Tech. (Hons.) project work of Mr. M. Burman, Dept. of Mining Engineering, "Natural radiation of coal and its relation with some of the coal properties" and a major part of the same was carried under my supervision in our Radioactivity Measurement Laboratory here. The dissertation was submitted in 1997.
- (x) "Radiometric Prospecting using Gamma – Ray Spectrometry" submitted by Mr. Surojit Chaudhury of M. Sc. (Fifth year, Exploration Geophysics) in June 1999.
- (xi) "Gap analysis for soil conservation and applications of Radon Emanation" submitted by Ms. P. Venkata Jyothsna of M. Sc. (Fifth year, Applied Geology) in May 2001.
- (xii) "Radioactivity and Resistivity studies around Kolaghat Thermal Power Plant, West Bengal, India" submitted by Mr. D. Majumdar of M.Sc. (Fifth Year, Exploration Geophysics) in May 2003.
- (xiii) "Radioactivity studies around coastal areas of Orissa, India" submitted by Mr. Bidyut Mandal of M.Sc. (Fifth Year, Exploration Geophysics) in May 2005.
- (xiv) "Bulk chemical differentiation between basalt, impact melts and spherules of Lonar impact crater, Maharashtra, India" submitted by Debasish Saha of M.Sc. (Geological Sciences) in May 2005.
- (xv) "Modelling of environmental radioactivity of flyash deposits around Kolaghat Thermal Power Station" by Mr. Abin Das of M.Sc. (Geophysics) in May 2006.
- (xvi) "Geochemical evolution of Group I iron meteorites: A Preliminary investigation" submitted by Mr. Surya Santa Rout of M.Sc. (Geological Sciences) in May 2006.
- (xvii) "The relationship between radon exhalation rate and uranium concentration in rocks" submitted by Mr. Md. Ziaur Rahman, M.Sc. (Geophysics) in May 2006.

- (xviii) "Meteoritic impacts and climatic changes in Pliocene-Pleistocene epochs" submitted by Ms. Trina Bose of M.Sc. (Geophysics) in May 2006.
- (xix) "The XRD analyses of maskelynite and radioactivity of impactites of Lonar meteoritic impact crater, India" submitted by Ms. Tania Mukherjee of M.Sc. (Geophysics) in May 2007.
- (xx) "Radionuclide measurements and deformation structures around Jaduguda - a preliminary study" submitted by Ms. Nabonita Biswas of M.Sc. (Geophysics) in May 2008.
- (xxi) "Radon and radioactivity modeling for a large phosphogypsum waste disposal site in the south-western part of Spain" submitted by Mr. Srikumar Roy of M.Sc. (Exploration Geophysics) in May 2008.
- (xxii) "Exploration of the Red Planet", submitted by Mr. Vivek Raj of M.Sc. (Exploration Geophysics) in May 2011 (Dr. A.G. Fairen, USA, Co-supervisor).
- (xxiii) "Genetic Algorithm: A tool for stochastic optimization" submitted by Mr. Pratik of M.Sc. (Exploration Geophysics) in May 2011.
- (xxiv) "Nuclear Magnetic Resonance Tool for Pore Size distribution and fluid characterization in Hydrocarbon Reservoir", submitted Mr. Amit Tiwari (Final Year Geophysics) in May 2012.
- (xxv) "Radionuclide Modeling of Fukushima Daichi Nuclear Power Plant, Japan", Submitted by Ms. Mampi Sarkar (Final Year Geophysics) in May 2012.
- (xxvi) "Correlation of Radiometric and VLF data for detection of uranium mineralized Zone along South Purulia shear zone, Purulia, West Bengal, India, submitted by Mr. Pranjal Maurya , Final Year M.Sc. Geophysics in May 2012.
- (xxvii) "Petrophysical parameters estimation by Well Log data, submitted by Mr. Rajan Agrawal, M.Sc. Final Year Geophysics in May 2012.
- (xxviii) "Production data analysis of Shale Gas Reservoirs", submitted by Mr. Soumya Kanta Rout, M.Sc. Final Year Exploration Geophysics, in May 2012.
- (xxix) "Spectroscopic gamma ray and logging techniques for the delineation of subsurface lithology of Heera Field in Mumbai Offshore Basin, India, submitted by Mr. Ashutosh Srivastava, M.Sc. Final Year Exploration Geophysics in May 2012.
- (xxx) "Systematic and random errors in Nuclear Counting", submitted by Mr. Himen Doley, M.Sc. Final Year Exploration Geophysics in May 2012.
- (xxxi) "Study of mobility of heavy metals from ash ponds", submitted by Ms. B. Suchitra, in December 2012.

(xxxii) “Delineating Thermal Conductivity Perturbation in the Shallow Subsurface for Hydrocarbon Exploration”, submitted by Mr. Tamajit Saha, in May 2016.

23. M. Tech. Thesis Supervision:

- (i) “ ^{222}Rn , Heat Flow and Radiometric studies along the Cu-U mineralisation, Singhbhum Shear Zone, Bihar” submitted in December 1998 by Mr. B. K. Mishra.
- (ii) “Filtering and classification for SAR Image Processing”, submitted in January 2000 by Mr. K. Bandyopadhyay.
- (iii) “Groundwater characteristics around 24-Parganas (South) with special emphasis on Arsenic and Radon”, submitted by Mr. S.S. Banerjee in January 2001.
- (iv) “Radioactivity and Radon Studies along Fracture zones in the areas around Galudih, East Singhbhum, Bihar”, submitted by Mr. A. Ghosh in January 2002.
- (v) “Relationship between radionuclides and rock structure in Godhra Granite, Gujarat”, submitted by Mr. Sandip Kumar Das in May 2005.
- (vi) “Natural radioactivity of ash and coal in major thermal power plants, West Bengal, India” submitted by Mr. Tapas Mondal in May 2006.
- (vii) “Alpha-decay damage in Allanite” submitted by Mr. S.M. Shivaprakash Dev in May 2007.
- (viii) “Radiometric study along the coast of Gopalpur, east coast of Orissa, India” submitted by Mr. A. Nasim in May 2008.
- (ix) “Radionuclide and trace element contamination around the Ash Ponds near Kolaghat Thermal Power Plant, West Bengal, India” submitted by Ms. Banashree Koushik Thakur in May 2009.
- (x) “Geochemical and physicochemical characteristics of Fly ash from selected thermal Thermal power plants in India” submitted by Mr. A.S. Sui in May 2010.
- (xi) “Radio-elemental studies in selected samples from Narwapahar, Jharkhand, implications towards uranium mineralization and effect of deformation on uranium concentration submitted by Mr. Vipfezol Kiso in December 2012.

24. Ph. D. Thesis Supervision:

- (i) “Geostatistical Modeling and Radiometric Studies of the Copper-Uranium ore bodies in parts of the Singhbhum Shear Zone, Bihar” Ph.D. dissertation submitted by A. R. Ghosh in March 2000 and Ph.D. degree awarded.

- (ii) “Chemical weathering induced uranium series disequilibrium studies in western parts of Singhbhum shear zone, Jharkhand” Ph.D. dissertation submitted by V.L. Narasimham, Dept. of Atomic Energy, Mumbai, India, sponsored Junior Research Fellow in September 2002 and Ph.D. degree awarded.
- (iii) “Radiometric, Geochemical and Environmental Radioactivity Studies of beach placer deposits of Orissa, India” and Ph.D. dissertation submitted by A. K. Mohanty, Institute Research Scholar in December 2003 and Ph.D. degree awarded.
- (iv) “Radioelement and trace element modeling around Kolaghat thermal Power Plant, West Bengal” and Ph.D. dissertation submitted by Ms. Arpita Mandal, Institute Research Scholar in March 2005 and Ph.D. degree awarded.
- (v) “Natural radioactivity and radiation dosimetry in the high background radiation area along the southern coast of Orissa, India”, Ph.D. dissertation submitted by Ms. N. Sulekha Rao and Ph.D. Degree awarded in June 2009.
- (vi) “Measurement and modeling of radon transport and distribution around tailing pond area and dwellings”, Ph.D. dissertation by Mr. Kailas Sekhar Banerjee. Ph.D. degree awarded in April 2011.
- (vii) “Metamictization and natural radioactivity studies around Jaduguda Eastern Singhbhum India” Ph.D. dissertation submitted by Ms. Mandakini Maharana, Ph.D. degree awarded in August 2011.
- (viii) “Effective elastic thickness in Active-Passive continental margins and its implications” Ph.D. thesis submitted by Mr. Ratheesh R.T. and Ph.D. degree awarded in August 2011 (co-supervisor).
- (ix) “Assessment of coastal archives in the Southeastern Coast of India with reference to extreme wave events”, Ph.D. thesis submitted by Ms. Vijayalaxmi C.S. in May 2012 (co-supervisor) and Ph.D. degree awarded in September 2012.
- (x) “Very low frequency electromagnetic and radiometric studies around South Purulia shear zone for the investigation of possible uranium mineralization” (co-supervisor) Ph.D. Thesis by Mr. Saurabh Mittal and Ph.D. awarded in January 2014.
- (xi) “Integrated study for Risk and Vulnerability assessment using Geochemical, Geophysical and Geospatial analysis around Kolaghat Thermal Power Plant, eastern India”, Ph.D. Synopsis of the Thesis submitted by Ms. Kajori Parial on September 2015.

25. Research projects undertaken:

- (i) Principal Investigator-“Modeling of radon emanation from soils and rocks in the shear zones and its migration”, sponsored by **B.R.N.S.**, Department of Atomic Energy, Mumbai, July 1999-June 2002.
- (ii) Principal Investigator-“A comparative study of the meteoritic components in the impact melt from Lonar impact crater and other impact craters of similar age : a geochemical and isotopic approach”, sponsored by **PLANEX**, Physical Research Laboratory, Ahmedabad and ISRO, Bangalore, July 2003–June 2006.
- (iii) Principal Investigator - “Natural radioactivity and radiation dosimetry in the high Background radiation area along the southern coast of Orissa, India”, sponsored by **B.R.N.S.**, Department of Atomic Energy, Mumbai.
- (iv) Principal Investigator – “Measurement and modeling of radon transport and distribution around tailing pond area and dwellings”, **B.R.N.S.**, DAE, Mumbai.
- (v) Principal Investigator - “A comparative structural analyses of Lonar and Ramgarh Crater for observations on impact structures on hard and soft target rocks, and geochemical analysis of impactites from these two craters, Sponsored by **PLANEX**, Physical Research Laboratory and ISRO, Bangalore, completed in May 2008.

26. Number of Research Publications: 89

Number of Books/Lecture Notes Published/ under Publication: 3

Number of Publications in Conference Proceedings: 21

Popular Science Write-ups: 2

27. LIST OF PUBLICATIONS:

A) Books/Lecture Notes:

1. **Radioactive Methods and Geochronology**, IIT Kharagpur Lecture Note, pp. 1 – 400, September 2000.
2. **Recent Trend in Modeling of Environmental Contaminants**, Edited by **Debashish Sengupta**, pp. 1-243, Published by Springer Publications, 2014.
3. **Modelling Trends in Solid and Hazardous Waste Management**, Edited by **Debashish Sengupta** and Sudha Agrahari, 2016 (being published by **Springer Nature**).

B) Published Papers:

1. **Sengupta, D.** and Van Gosen Bradley, Placer type Rare-Earth Element Deposits, 81-100, 2016, In Rare Earth and Critical Elements in Ore Deposits (Eds. P.L. Verplanck and M.W. Hitzman), Reviews in Economic Geology,, Vol. 18, Society of Economic Geologists, Inc. Littleton, CO 80127, USA.
2. Parial, Kajori Agrahari Sudha, **Sengupta, D.**, Identification of contaminated zones using direct current resistivity surveys in and around Kolaghat Thermal Power Plant, West Bengal, India, Indian Journal of Geology and Earth Sciences, 2015, Vol. 1, No. 2, pp. 55-64.
3. Banerjee, K. S. and **Sengupta, D.**, Importance of Radon studies in rural areas and correlation of Indoor Radon level with Radon Inventory, International Journal of Low Level Radiation, 2015, volume 10, issue 10, pp. 48-60.
4. Rao, N. Sulekha, Parial Kajori, Koide Hiroaki, and **Sengupta, D.**, Measurement of environmental external gamma radiation dose rate outside the dwellings of southern coastal Odisha, eastern India, Current Science, Vol. 109, No. 3, pp. 600-603, 2015.
5. Parial Kajori, Guin, R., Agrahari, Sudha and **Sengupta, D.**, Monitoring of radionuclide migration around Kolghat thermal power plant, West Bengal, Journal of Radioanalytical and Nuclear Chemistry, doi/10.1007/s10967-015-41`52-z, 2015.
6. Sharma, A., Mahur A. K., Sonkawade, R. G., **Sengupta, D.**, Sharma, A. C. and Prasad Rajendra, Measurements of radon exhalation from Fly ash samples collected from Kolghat Thermal Power Plant, West Bengal, India, International Journal of Current Research, Vol. 7, issue 1, 11430-11433, 2015.
7. Rao, D. S., and **Sengupta, D.**, Electron microscopic studies of limonite from the Chhatrapur Coast, Odisha, India, and their implications in processing, Journal of Geochemistry, 2014.
8. S. Mittal, R. Guin, S. P. Sharma and **D. Sengupta** (2013), Estimation of ^{238}U , ^{232}Th and ^{40}K concentrations in Rock and Soil Samples Around South Purulia Shear Zone, India, International Journal of Low Radiation, Vol.9, No.2, 110-118.
9. A. Mandal, A. Biswas, S. Mittal, W. K. Mohanty, S. P. Sharma, **D. Sengupta**, J. Sen and A. K. Bhatt (2013), Geophysical anomalies associated with uranium mineralization from Beldih mine, South Purulia Shear Zone, India, JGSI, Vol 82, 601-606.
10. S. Mittal, S. P. Sharma, A. Biswas and **D. Sengupta**, Correlation of VLF-EM data with radiometric measurements: Implications for Uranium Exploration around Beldih, South Purulia Shear Zone, India, International.Journal of Geophysics, 2014.

11. S. Mittal, P. Maurya, D. Sengupta, S. P. Sharma, Delineation of radioactive zones using VLF-EM data and radioactivity data between Beldih mine and Barabazar region in South Purulia Shear Zone, India, *Exploration Geophysics*, 2014.
12. Mandal Ranjita, Pansare G. R., **Sengupta D.**, and Bhoraskar V. N., Angular Distribution of Neutron Flux around Tritium target of 14MeV Neutron Generator, accepted in *Journal of Physical Society of Japan*, 81(10), 2012.
13. Trivedi Deshraj, Raicy Mani Christy, Devi Koravangatt, Kumar Devender, Buynevich, Srinivasan, Iyer, Nagesh R., Guin, R. **Sengupta D.** and Nair Rajesh R., Sediment characteristics of Tidal Deposits at Mamdvi, Gujarat, India : *Geophysics, Textural and Mineralogical attributes*, *International of Geosciences*, 2012, 3, p://www.ScriP.org/journal/ijg
14. Trivedi Deshraj, Maji Tanmay K., **Sengupta D.** and Nair Rajesh R., Reappraisal of effective elastic thickness in the south-west Indian Ocean and its possible implications, *Annals of Geophysics*, 55, 2, 2012, doi:10.440/ag-5171.
15. Nair R. Rajesh, Murari K. Madhav, Vijayalakshmi, Buynevich Ilya, Goble, Ron J.Srinivasan, P, Murthy, S.G.N., Trivedi Deshraj, Kandpal, Suresh Chandra, Hussain, S.M., **Sengupta, D.**, Singhvi, Ashok K., Subsurface signatures and timing of extreme wave events, along the southeast Indian coast, *Journal of Earth System Science*, 120, No.5, pp. 873-883, 2011.
16. Banerjee K. S., Guin R., Gutierrez-Villanueva, Charro M. E. and **Sengupta D.**, Variation of U-238 and Th-232 enrichment in U-mineralised zone and geological controls on their spatial distribution, Singhbhum shear zone of India, *Environmental Earth Sciences*, 65(7), 2103-2110, 2012.
17. Mandal Ranjita, Thanekar, Anita, Panesar, G. R., Bhoraskar, V. N. and **Sengupta, D.**, Variation of Flux and Energy of 14 Mev Neutrons with variation of matrix around a sample, *Material Science Research India*, 8(2), 349-352, 2011.
18. Mandal Ranjita, Bhoraskar, V. N. and **Sengupta, D.**, Resistivity measurement of Teflon doped with sodium and Lithium, *Material Science Research India*, 8(2), 361-364, 2011.
19. Kumar Ratheesh, R. T., **Sengupta, D.**, and Nair R Rajesh., Effective elastic thickness in active-passive continental margins and its implications, *DCS-DST Newsletter*, 2-12, 2011.
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C) Papers Published in Conference Proceedings

1. **Sengupta, D.** and Mandal A., Radionuclide and trace element contamination around Kolaghat thermal power plant, West Bengal – Environmental implications, Workshop on “Environmental Pollution and Awareness”, Rural Development Centre, IIT Kharagpur, 30th September 2005.
2. **Sengupta, D.**, Misra, S., Dube, A., Singh, B. and Mohanty, A. K., Lonar impact crater, India: Possible impact angle and composition of impactor, Symposium on Planetary Science Research in India, Physical Research Laboratory, Ahmedabad, India, 8th November 2004, p. 13.
3. Narasimham, V. L. and **Sengupta, D.**, K-metasomatism and uranium mineralisation in Singhbhum shear zone, presented at the **National Symposium on recent advances in stratigraphy and petrology**, Dept. of Geology, University of Madras, Chennai, India, 26th -27th March 2003.
4. **Narasimham, V. L.** and **Sengupta, D.** Relevance of Pelite Index for green schist metasedimentary rocks of Singhbhum shear zone, presented at **National Symposium on recent advances in stratigraphy and petrology**, Dept. of Geology, University of Madras, Chennai, 26th -27th March 2003.

5. Narasimham, V. L., **Sengupta, D.**, and Chatterjee, J. M., Application of High Purity Germanium (HPGe) Detector in determining activities of uranium series radionuclides in geological samples, National Seminar on **Trends in Environmental Geochemistry** held at Department of Earth Sciences, Annamalai University, Chidambaram, 21st–22nd March, 2003.
6. **Sengupta, D.** and Mandal, A., Radioactivity in coal and fly ash of coal - fired Thermal Power Plant at Kolaghat, West Bengal, India, presented at the **International Conference on the Role of Natural Resources and Environment in Sustainable Development in South and Southeast Asia (NESDA)**, Dacca, Bangladesh, 7th Jan.–20th Jan. 2003.
7. **Sengupta, D.**, Ghosh, A. and Mamtani, M. A., Radioactivity and Radon Studies along fracture zones around Galudih, Singhbhum shear zone, Jharkhand State, **1st Workshop on Natural Radionuclides in Hydrology and Hydrogeology (NURAHYD-1)**, Luxembourg, 4th Sept.-7th Sept. 2002.
8. **Sengupta, D.**, Mohanty, A. K., Das, S. K., and Saha S. K., Natural Radioactivity and Radiation Exposure at the High Background area at Chhatrapur Beach Placer deposits Orissa, India, **Seventh International Symposium Natural Radiation Environment (NRE – VII)**, Rhodes, Greece, 20th May – 24th May 2002.
9. **Sengupta, D.**, Narasimham, V. L., Mayya, Y. S. and Ramachandran, T. V., Radiometric Studies and radon measurements in parts of the Singhbhum shear zone Jharkhand State India: **Seventh International Symposium Natural Radiation Environment (NRE –VII)** 20–24 May 2002, Rhodes, Greece.
10. Mohanty, A. K., **Sengupta, D.**, Vijayan, V., Das, S. K and Saha, S. K., Radiogenic characteristics of monazite sands in the Chhatrapur beach placer deposits of southeastern coastal Orissa, India. Workshop on “**Low Energy Particle Accelerators and their Applications**”. 17th April-19th April 2002, Institute of Physics, Bhubaneswar.
11. Mohanty, A. K., **Sengupta, D.**, Das, S. K and Saha, S. K., Natural radioactivity of heavy mineral sands in the beach placer deposits of Orissa, India. Symposium on “**Measurement and Computational Techniques in Radiation Physics and Safety**”, 10th February – 12th February 2002, Department of Physics, Visva-Bharati University, Santiniketan, West Bengal, India.
12. Narasimham V. L., and **Sengupta, D.**, Weathering features and U-Pb behaviour in the soils and uranium - copper rich rocks in western parts of the Singhbhum shear zone, Jharkhand State, **14th Conference of Indian Institute of Geomorphologists (IGI) on Geomorphology and environment**, 6-7, 28th – 30th December 2001.

13. Narasimham, V. L., **Sengupta, D.**, Mayya, Y. S. and Ramachandran, T. V., "Radon Measurements in dwellings in parts of the Singhbhum Shear Zone, Jharkhand State", presented at the **Twelfth National Symposium on Solid State Nuclear Track Detectors (SSNTDs)** held at D. A. V. College, Jalandhar, 43, 29th - 31st October 2001.
14. Kumar Rajeev, Kumar Rajesh, **Sengupta, D.** and Rajendra Prasad, Measurement of uranium concentration and radon exhalation in Bihar uranium and copper mine rocks, **Second International Seminar on Analytical Techniques in Monitoring the Environment**, Tirupati, 18th - 20th December, 2000.
15. **Sengupta, D.**, Tatumi, S. H. Mittani, J. C. R., Watanabe, S., and Matsuoka, M., Thermoluminescence and optical absorption studies on aragonite's and calcite's from Spain and Brazil, **XX Encontro Nacional de Fisica de Materia Condensada**, Caxambu, Minas Gerais, Brazil, 184, 10th - 14th June 1997.
16. **Sengupta, D.** and Singh, V., Radon emanation and diffusion in naturally occurring soils and rocks, **Third International Colloquium on Rare Gas Geochemistry**, Amritsar, India, 46, December 1995.
17. **Sengupta, D.**, Dutta, D. J. and Boyce, A. J., Radiometric and Sulphur isotopic studies on the sulphide bodies from the Singhbhum Cu - U belt, Eastern India, **The First Latin American Geophysical Conference and exposition of the Latin American Geophysical Union**, Rio de Janerio, Brazil, August 1995.
18. Kalvey, A. R. and **Sengupta, D.**, Exploration of radioactive materials using a portable gamma - ray Spectrometer, **National Seminar on Physics in Earth Sciences**, Geological Survey of India, February 1991.
19. **Sengupta, D.**, and Bhandari, N., Formation age of Lonar Meteor Carter, **Proc. Lunar and Planetary Science Conf. 18th** (Edit. G. Ryder and F. Horz), NASA Publication, Houston, USA, 1988.
20. **Sengupta, D.**, Singhvi, A. K. and Deraniyagala, S. U., Thermoluminescence studies on beach dunes from Sri Lanka, **Proc. National Symposium on Thermally Stimulated Luminescence and related phenomena**, Ahmedabad, India, 85-86, 1984.
21. **Sengupta, D.**, Singhvi, A. K., Potdar, M. B., and Bhandari, N., Thermoluminescence depth profiles in chondrites and their modification due to ablation, **Proc. Seminar on**

Geological Records and Contemporary Fluxes of Charged Energetic particles,
Ahmedabad, India, 72-73, 1981.

D) Popular Science Write-ups

1. Sen, V. and **Sengupta, D.**, Radon monitoring for Earthquake Prediction, **Science Reporter**, 19 – 22, September 1991.
2. **Sengupta, D.**, Antarctic Meteorites, **Science Reporter**, 38 – 40, May 1990.

E) Refresher Courses on Geophysics/Invited talks

- i) Invited to present two Lectures on “**Applications of Radioactivity in Geology and Geophysics**” in the refresher course on Geophysics for University. Teachers of Geophysics/Geology/Physics/Mathematics organised by the Department of Space Science (DOSS), University of Pune, India, during the period from 28th December 1998 to 24th January 1999.
- ii) Invited to present five talks on “**Application of Radioactivity in Age Determination of Geological Formations**” at the Department of Space Sciences, University of Pune, India, from 6th April – 8th April 2001 as a part of the M.Sc. (Space Sciences) curriculum on **Paleomagnetism of Rocks**.
- iii) Presented an Invited Talk on “**Meteorite and Cometary Impacts on Earth and its Effect on the Terrestrial Environment**” at Birla Industrial and Technological Museum, Kolkata, India, on 25th November 2001.
- iv) Presented an Invited Talk on “**Flyash Management: Case studies of some major Thermal Power Plants of West Bengal, India-Environmental Implications**” QIP Short Term Course 14-19 November 2005 at the Department of Civil Engineering Indian Institute of Technology, Kharagpur, India.
- v) Presented an Invited Talk on “**Geophysical Techniques for Exploration of Concealed Uranium Deposits and Advanced Methods of Exploration for Atomic Minerals including Geophysical Methods**” conducted at the Management Training Centre UCIL, Narwapahar on 9th November, 2005.
- vi) Presented an Invited talk at on “**Modeling of Radioactivity and Radon Data from the Singhbhum shear zone, Jharkhand, India**” at the 14th Symposium on SSNTD’s and their Applications, Nov. 10-12, 2005 at the Department of Applied Physics, Z.H. College of Engg. & Tech., Aligarh Muslim University, Aligarh.
- vii) Presented an Invited Talk on “**Radiometric Analysis and its Application in Geosciences**” on 12.2.2006 at Khallikote College, Berhampur, Orissa, India.

F) Other Assignments

I have been associated with numerous expert committees in National bodies/committees on curricular revamping, assessment of research programmes, selection of faculty members, and assessment of research reports including Ph.D. Dissertations (both Indian and Foreign dissertations). I have also reviewed a large number of research publications for journals of International repute like Journal of Environmental Radioactivity, Radiation Measurements, Fuel, Applied Radiation and Isotopes etc.
