

## *Dr. (Mrs) Sushmitha Baskar*

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*Dr. Sushmitha Baskar is presently an Assistant Professor (Environmental Studies), School of Agriculture, Chair for Sustainable Development, Indira Gandhi National Open University (IGNOU), New Delhi. She is currently the Programme Co-ordinator for Appreciation program on sustainable management of wetlands (APSMW) at CSD, IGNOU. She earned her MSc (Gold medalist) and M.Phil in Environmental Science from Bharathiar University, Coimbatore, Tamil Nadu. She obtained her PhD (2002) from the Department of Environmental Science and Engineering, Guru Jambheshwar University, Hisar under the supervision of Professor Anubha Kaushik. She has been awarded various national fellowships like CSIR (SRF), CSIR (RA), CSIR- Pool Scientist (SRA), UGC Dr. DS Kothari fellowship and international fellowships. She was awarded Swiss Fellowship (2002-04) to work at the Department of Earth Sciences, Swiss Federal Institute of Technology, ETH - Zurich, Switzerland, Indo- Norwegian Grant (2008-09) to work at Centre for Geobiology, University of Bergen, Norway and Swedish Grant (2009) at Stockholm University, Sweden where she carried out research in the field of Cave geomicrobiology. Her research specialization includes Environmental Geomicrobiology and Biogeochemistry. She has made significant contributions in peer reviewed international journals and has also authored three books along with Prof. R. Baskar in Environmental Sciences and Natural disasters. She is a reviewer in peer reviewed journals 'Current Science' and 'Astrobiology'. She is a trained carnatic classical singer and has given many performances.*

### **RESEARCH, PUBLICATIONS AND ACADEMIC CONTRIBUTIONS**

#### **A) RESEARCH PAPERS (PUBLISHED IN JOURNALS)**

1. Baskar S, Baskar R, Thorseth IH, Øvreas L, Pedersen RB. 2012. Microbial iron precipitation associated with a neutrophilic spring of Borra caves, Vishakapatnam, India. *Astrobiology Journal*, Mary Ann Liebert Publication. *Astrobiology*. April 2012, 12, 4, 327-346.
2. Baskar S, Baskar R and Routh. J. 2011. Biogenic Evidences of Moonmilk deposits in the Krem Mawmluh Cave, Meghalaya, India. *Geomicrobiology Journal*, 28, 3, 252-265, Taylor and Francis Publication.
3. Baskar S, Baskar R and Barton HA 2009. Cave Geomicrobiology as a thrust area of research in the Indian context. *Current Science*, Vol. 97, No 5, 621-622.
4. Baskar S and Baskar R. 2009. Geobiology and Geomicrobiology: Importance and need for studies in the Indian context, *Current Science*, Vol. 96, No 1, 200-201.
5. Baskar S, Baskar R, Lee N, Kaushik A and Theophilus P.K. 2008 Precipitation of iron in the microbial mats of the spring waters of Borra Caves, Vishakapatnam, India: Some geomicrobiological aspects. *Environmental Geology*, Springer Publication, Vol. 56, No.2 237-243.
6. Baskar S, Baskar R, Lee N and Theophilus P.K. 2009. Speleothem formations of Mawsmai caves and Krem Phyllut caves, Meghalaya, India: Some evidences for biogenic activities. *Environmental Earth Science (Springer Publication)*, Volume 57, Number 5, 1169-1186.
7. Baskar S., Baskar R., Kaushik A. 2007. Evidences for microbial involvement in the genesis of speleothem carbonates, Borra Caves, Vishakapatnam, India. *Current Science*, Vol. 92, No. 3, 350 – 355 pp.
8. Baskar S, Baskar R, Mauclaire L and McKenzie J.A 2006. Microbially induced Calcite precipitation by culture experiments – Possible origin for Stalactites in Sahastradhara, Dehradun, India. *Current Science*. Vol. 90, No.1, pp 58 – 64.
9. Baskar S., Baskar R., Mauclaire L. and McKenzie J.A. 2005. Role of microbial community in stalactite formation, Sahastradhara caves, Dehradun, India. *Current Science*, Vol. 88, No. 8, pp 1305-1308.
10. Baskar S, Baskar R and Kaushik A (2003). Role of Microorganisms in weathering of the Konkan-Goa laterite formations. *Current Science*, Vol.85, pp 1129-1134.
11. Baskar S, Baskar. R. and Kaushik. A. (2002) Mineralogical variations in the Konkan-Goa Laterites. *Journal of Indian Association of Sedimentologists*, Vol. 21 (1), pp 31-37.

12. Baskar S, Baskar. R. and Kaushik. A. (2002) Geochemical behaviour of major and trace elements in laterites from Konkan-Goa coastal Belts, India. *Journal of Applied Geochemistry*, Vol.4, No.2B, pp 475-486.
13. Baskar S and Usha Rani M.V. (2002). Genotoxic effects of untreated and treated paper mill effluents on the somatic cells of *Allium cepa*.L. *Pollution Res.* Vol. 21 (4), 469-472.
14. Baskar S and Usha Rani M.V. (2002). Cytogenetic and biochemical effects of untreated and treated paper mill effluents on the somatic cells of *Allium cepa*.L. *Pollution Res.* Vol. 21 (4), 473-477.

#### **B) Popular articles and reports**

15. Baskar, S; Baskar, R and Dharamvir 2013. Why should we observe World Wetland Day? *Haryana Review*. Feb 2013, Issue 2, 48-49. Edited and published for Govt of Haryana by the Dept of Information, Public relations and Cultural affairs, issued from Samvad.
16. Baskar S, Baskar R and Dharamvir 2012. Forests, pieces of heaven on earth. *Haryana Review*, March 2012, vol 26, issue 3 p 30-31. Edited and published for Govt of Haryana by the Dept of Information, Public relations and Cultural affairs, issued from Samvad.
17. Baskar S, Baskar R and Dharamvir 2012. Festival of colours. Let's have an eco-friendly holi. *Haryana Review*, March 2012, vol 26, issue 3 p 32. Edited and published for Govt of Haryana by the Dept of Information, Public relations and Cultural affairs, issued from Samvad.
18. Baskar S, Baskar R and Dharamvir 2010. Are we heading towards doomsday? *Haryana Review*, July 2010, vol 24, issue7 p 6-8. Edited and published for Govt of Haryana by the Dept of Information, Public relations and Cultural affairs, issued from Samvad.
19. Baskar S and Baskar R. 2010. Workshop on Geomicrobiology and microbe-sediment interaction – A report, News and notes., *JGSL*, Vol. 76., 537.

#### **C) RESEARCH PUBLICATIONS (BOOK/MONOGRAPHS)**

1. ENVIRONMENTAL SCIENCES FOR ENGINEERING UNDERGRADUATES (First Edition) (As per AICTE notified syllabus) by Dr.Sushmitha Baskar and Dr.R.Baskar, 2007 Unicorn Publishers, New Delhi, 166pp. ISBN 978-81-7806-125-2
2. ENVIRONMENTAL STUDIES FOR UNDERGRADUATES (First Edition) (As per UGC notified syllabus) by Dr.Sushmitha Baskar and Dr.R.Baskar, 2007 Unicorn Publishers, New Delhi, 363pp. ISBN 978-81-7806-132-0
3. NATURAL DISASTERS (First Edition) by Dr.Sushmitha Baskar and Dr.R.Baskar, 2009 Unicorn Publishers, New Delhi 159pp. ISBN 978-81-7806-168-9
4. NATURAL DISASTERS (Second Edition) by Dr.Sushmitha Baskar and Dr.R.Baskar, 2012 Unicorn Publishers, New Delhi 159pp. ISBN 978-81-7806-168-9

#### **Invited Book chapters**

- 1) Lee, NM; Meisinger, DB; Aubrecht, R; Kovacic, L; Baskar, S; Baskar, R; Jimenez, CS; Porter, M and Engel, AS. 2012. Life in Caves, Book chapter to "Life at Extremes", Bell, E., CABI Publishing.
- 2) Baskar S and Baskar, R. 2012. The Calcite Moonmilk controversy: A critical review. In: *Calcite: Formation, Properties and Applications*, 231-243. ISBN: 978-1-61470-782-0 Nova Publishers.
- 3) Baskar S, Baskar R, Tiwari V, Thorseth IH, Øvreas L, Lee NM and Routh J. 2011. Cave geomicrobiology in India: Status and prospects, *The Stromatolites: Interaction of microbes with sediments*. Eds. Joseph Seckbach and Vinod Tewari. *Cellular Origin, Life in Extreme Habitats and Astrobiology*, Volume 18, Part 5, 541-569, DOI: 10.1007/978-94-007-0397-1\_24, Springer Publication.
- 4) Baskar S and Baskar R 2012 Baskar, S. and Baskar, R. (2012). Environmental Assessment and Planning, *In: Introduction to Environmental Sciences*, Eds Khoiyangbam, R.S and Gupta, N. The Energy and Resources Institute Publications (TERI), ISBN-10: 8179934551, ISBN-13: 978-8179934555, 623 pp.

#### **D) TRAINING COURSES/INVITED TALKS/CONFERENCES/SEMINAR/WORKSHOP PAPERS**

##### **i) Training courses**

1. UGC Sponsored Training Program on Disaster Management, February 14-16, 2013, ASC, GJUST, Hisar.
2. UGC Sponsored Training Program on Writing Research Projects and Research papers, March 1 – 6, 2013, ASC, GJUST, Hisar.
3. Workshop on Multimedia and E-content development, IGNOU, New Delhi, January 2013
4. Orientation Programme for the use of library resources, E-library and Information Services, (Sept 12<sup>th</sup> 2012).
5. Orientation course, Academic Staff College (UGC), Guru Jambheshwar University of Science and Technology, Hisar, (24<sup>th</sup> Sept – 20<sup>th</sup> Oct 2012).

6. Orientation course in distance education for newly recruited teachers, IGNOU, New Delhi, (November 2011).
7. A Short Course on Scanning Electron Microscopy (October 17 - 22, 2002), Department of Earth Sciences, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.
8. UNESCO training program on Exploration and Environmental Geochemistry, (September 1-15, 2003), GEOCHIM 2003, Prague, Czech Republic.
9. Microbial Ecology (Nov. 26 – Dec 20, 2002), Department of Plant Sciences, University of Zurich, Switzerland.
10. Remote Sensing and GIS for Natural Resource Management, Haryana State Remote Sensing Application Centre (11-15 December 2000) HARSAC, Hisar, Haryana.
11. Sedimentological and Paleozoanographic Seminars (Oct. 21 – Dec. 21, 2002), Department of Earth Sciences, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.

**ii) Papers presented in Conferences, seminars, workshops, symposia**

1. Baskar, S and Baskar, R (2013). Eco-restorative Applications of some microorganisms identified in Meghalaya caves. Indian Science Congress, 3-7<sup>th</sup> January 2013, University of Kolkata, Kolkata.
2. Baskar, R and Baskar, S (2013). Cave bio-signatures from Borra caves, Visakhapatnam, India: some possible astrobiological relevance. Indian Science Congress, 3-7<sup>th</sup> January 2013, University of Kolkata, Kolkata.
3. Baskar, S and Baskar, R (2012). Microbial Diversity of Cave Ecosystems: A study of the iron mats of the Borra Caves, Andhra Pradesh, India. Second National Conference on Environment and Biodiversity of India (EBI), 29-30<sup>th</sup> Dec 2012, New Delhi.
4. Baskar S, Baskar R and Kaushik A. (2012). Biocalcification by cave microbes: Ecorestorative applications. National Seminar on Strategies for Mitigation of Environmental Degradation and Climate Change. Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar (2-3<sup>rd</sup> March). Special Appreciation Award for best paper presentation.
5. Baskar S, Baskar R and Kaushik A. 2012. Initial Geomicrobiological report on Syndai Cave Ecosystem, Jaintia Hills, Meghalaya: Some SEM Observations. Indian Science Congress ISCA 2012.
6. Baskar R and Baskar S. 2012. Role of Geomicrobiology in enhancing understanding of earth processes: Some solid examples. Indian Science Congress ISCA 2012.
7. Baskar S and Baskar R. (2011). Microbial diversity of spring mats from Borra caves, Vishakapatnam. Multidisciplinary approaches in frontier areas of Environmental Science and Engineering. Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar (4-5<sup>th</sup> March).
8. Baskar S, Baskar R, Rana D, Panghal S and Dhanda Y. (2011). A preliminary report on gemicrobiology of Mamluh caves, Meghalaya. Multidisciplinary approaches in frontier areas of Environmental Science and Engineering. Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar (4-5<sup>th</sup> March).
9. Baskar S, Baskar R, Kaur A, Singh K and Shrivastava R. (2011). An initial report on geomicrobiological studies of Sahastradhara caves, Dehradun. Multidisciplinary approaches in frontier areas of Environmental Science and Engineering. Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar (4-5<sup>th</sup> March).
10. Baskar S and Baskar R. (2011). Geomicrobiology and mineralogy of Dharamsala caves, Dharamsala. Multidisciplinary approaches in frontier areas of Environmental Science and Engineering. Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar (4-5<sup>th</sup> March).
11. Rangarajan R, Routh, J, Ghosh P, Mangini A, Fohlmeister, Baskar S, Baskar R and Holzkamper, S. (2011). Variation in contribution of Bay of Bengal moisture from stable isotopic composition of cave carbonates from Meghalaya, India. European Geophysical Union (EGU), Vienna, Austria, (3-8<sup>th</sup> April).
12. Baskar S and Baskar R (2010). Geobiology and Geomicrobiology: An emerging field in earth system science. Sixth Nepal Geological Congress, Kathmandu, Nepal (15-17 Nov).
13. Arya M, Sheikh GA, Theophilus, PK, Baskar S and Baskar R. (2010). Geochemistry of cave water from Jaintia and Khasi hills, Meghalaya. National conference on environmental degradation: effects, challenges and remedies, (25-27<sup>th</sup> Feb).
14. Baskar S, Baskar R, Thorseth I H, Øvreas L, Pedersen R B, Lee N M and Routh J. (2009). Microbial involvement in the precipitation of iron in organic mats associated with a neutrophilic spring of Borra caves, Vishakapatnam, India. Winter Conference (January 13-15), Geological Survey Norway, Bergen.
15. Baskar S, Baskar R, Natuschka M. Le, Joyanto Routh and Theophilus PK (2009). Some evidences of biogenecity in the speleothems from Mawsmai and Krem Phyllut caves, Meghalaya, India. 1<sup>5th</sup> ICS

- International Congress of Speleology, Texas, USA in Symposium Geomicrobiology of cave and karst environments.
16. Engel AS, Meisinger DB, Porter ML, Baskar S, Baskar R, Lee NM. (2008). Cave microbiology as a window into the subsurface. Summary of presentation for CAREX meeting, Sant Feliu de Guixols, Spain, 30 November – 2 December, 2008, WG4 – Deep biosphere.
  17. Baskar S, Baskar R, Thorseth I H, Øvreas L, Pedersen R B, Lee N M and Routh J. Microbial iron precipitation in an organic mat associated with a neutrophilic spring of Borra caves, Vishakapatnam, India: A SEM and TEM approach. International workshop on Geobiology (20-22 October 2008), Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
  18. Baskar R, Baskar S, Natuschka Lee, Kaushik A and Theophilus PK (2008). Precipitation of iron in the microbial mats of the spring waters of Borra caves, Vishakapatnam. International Kalkowsky-Symposium “Geobiology of Stromatolites” Gottingen, Germany, 4-11 October.
  19. Baskar S, Baskar R, Mauclaire L and McKenzie J.A (2008). Microbially induced precipitation of calcite in culture experiments – Possible origin for Stalactites in Sahastradhara, Dehradun, India, International Geological Congress (IGC), August 6-14, Norway.
  20. Baskar S, Baskar. R. and Kaushik. A. (2004). Role of microorganisms in weathering of the Konkan-Goa laterite formations. International Geological Congress (IGC), August 20-28, Italy.
  21. Baskar S., Baskar R., Mauclaire L. and McKenzie. J.A. (2004). Initial results of mineralogical and geomicrobiological study of stalactites from Sahastradhara caves, Dehradun, India. Swiss Sedimentologists Meeting (Swissed), 31 Jan, Fribourg, Switzerland, p.7.
  22. Baskar S, Baskar. R. and Kaushik. A. (2003). The Laterites of Konkan-Goa coastal belts: Geochemistry, mineralogy and microbiology. Swiss geoscience meeting SGM 2003, Nov. 28-29, Basel, Switzerland.
  23. Baskar S, Baskar. R. and Kaushik. A. (2003). Mineralogy and geomicrobiology of the Konkan-Goa laterites, National seminar on “Emerging environmental issues and technological challenges”, September 1-2, Guru Jambheshwar University, Hisar, India, pp. 13-14.
  24. Baskar S, Baskar. R. and Kaushik. A. (2002) A study of the mineralogical changes in the Konkan-Goa Laterites using XRD. National Seminar, Indian Association of Sedimentologists, Nov. 6-8, Aligarh Muslim University, Aligarh, India, p. 12.
  25. Baskar S, Baskar. R. and Kaushik. A. (2002) Geochemical behaviour of major and trace elements in laterites from Konkan-Goa coastal Belts, India. International Symposium on Applied Geochemistry in the coming decades, August 10-12, 2001, Osmania University, Hyderabad, India, p.36.
  26. D. Srinivasan, Sushmitha Krishnan and P. Lakshmanaperumalsamy, (1995): Antimicrobial activity of some Indian medicinal plants used in Folkloric medicine. International seminar on Recent Trends in Pharmaceutical Sciences, 18 -20 February, Ootacamund, India.
  27. Baskar S and Baskar. R Geomicrobiology and Microbe-Sediment Interactions, DST brain storming workshop, 19-20<sup>th</sup> August 2010, MS University, Baroda.
  28. Invited Guest Lecture (3<sup>rd</sup> September 2008), by Sushmitha Baskar: Geomicrobiology of Cave Deposits from India, Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
  29. Astrobiology Workshop (29-30<sup>th</sup> September 2008), Centre for Geobiology (CGB), University of Bergen, Bergen, Norway. Presented a paper "Cave bio-signatures from some Indian caves: Applications beyond Earth" by Sushmitha Baskar.
  30. Baskar S, Baskar R, Thorseth I H, Øvreas L, Pedersen R B, Lee N M and Routh J. Microbial iron precipitation in an organic mat associated with a neutrophilic spring of Borra caves, Vishakapatnam, India: A SEM and TEM approach. International workshop on Geobiology (20-22 October 2008), Centre for Geobiology (CGB), University of Bergen, Bergen, Norway. Poster presentation.
  31. Invited Lecture (13<sup>th</sup> November 2008), by Sushmitha Baskar: "Cave geomicrobiology: Some case studies from India", Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
  32. Baskar S, Baskar R. (2008). Invited speaker, “Geomicrobiology: Applications in Earth and Beyond”, National Workshop on “Application of microbiology for human welfare” Feb. 9, Baba Farid Institute of Technology, Dehradun, India, p 20.
  33. Astrobiology Workshop (29-30<sup>th</sup> September 2008), Centre for Geobiology (CGB), University of Bergen, Bergen, Norway. Presented a paper "Cave bio-signatures from some Indian caves: Applications beyond Earth" by Sushmitha Baskar.
  34. International workshop on Geobiology (20-22 October 2008), Centre for Geobiology (CGB), University of Bergen, Bergen, Norway. Poster presentation: Baskar S, Baskar R, Thorseth I H, Øvreas L, Pedersen R B, Lee N M and Routh J. Microbial iron precipitation in an organic mat associated with a neutrophilic spring of Borra caves, Vishakapatnam, India: A SEM and TEM approach

### **iii) Invited Talks/ Lectures and Chairmanships at national or international conference/seminar etc.**

1. Baskar S 2012. Some Environmental Issues and Case Studies. Invited speaker for April 21<sup>st</sup> 2012 Earth Day celebrations, VDJS, Hisar
2. Baskar R. and Baskar S (2010). Invited speaker, “Geomicrobiology Geomicrobiology and Microbe-Sediment Interactions, DST brain storming workshop, 19-20<sup>th</sup> August 2010, MS University, Baroda.
3. Baskar S 2010. Environmental Science Issues. Invited talk for Eco-Science week OP Jindal School, Hisar August 2010.
4. Invited Lecture (13<sup>th</sup> November 2008), by Sushmitha Baskar: "Cave geomicrobiology: Some case studies from India", Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
5. Baskar S, Baskar R. (2008). Invited speaker, “Geomicrobiology: Applications in Earth and Beyond”, National Workshop on “Application of microbiology for human welfare” Feb. 9, Baba Farid Institute of Technology, Dehradun, India, p 20.
6. Invited Guest Lecture (3<sup>rd</sup> September 2008), by Sushmitha Baskar: Geomicrobiology of Cave Deposits from India, Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
7. Baskar S 2008 "Cave geomicrobiology: Some case studies from India", Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
8. Baskar S 2007. Our Environment. Invited talk, Ved Vyasa DAV public School, Vikaspuri Delhi, 2<sup>nd</sup> August.

### **Workshops/Training programs/Public Lectures: Attended (International)**

1. Geobiology special workshop featuring guest lectures by Prof. Joachim Reitner, University of Göttingen and Prof. Jörn Peckmann, MARUM, University of Bremen (19<sup>th</sup> February 2009), Centre for Geobiology (CGB), University of Bergen, Norway.
2. AEON-CGB Barberton Early Earth Workshop (24-25<sup>th</sup> November, 2008), Centre for Geobiology (CGB), University of Bergen, Bergen, Norway.
3. UNESCO training program on Exploration and Environmental Geochemistry, (September 1-15, 2003), GEOCHIM 2003, Prague, Czech Republic.
4. First Swiss Geobiology workshop, Nov. 29, 2002, Department of Plant Sciences, University of Zurich, Switzerland.
5. Microbial Ecology (Nov. 26 – Dec 20, 2002), Department of Plant Sciences, University of Zurich, Switzerland.
6. A Short Course on Scanning Electron Microscopy (October 17 - 22, 2002), Department of Earth Sciences, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.
7. Sedimentological and Paleozoanographic Seminars (Oct. 21 – Dec. 21, 2002), Department of Earth Sciences, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland.

### **(National)**

1. National Conference on Secondary Education, February 26<sup>th</sup> 2013, “Is Secondary Education on Track”, CII, India Habitat Centre, Jacaranda Hall, Lodhi road, New Delhi.
2. Conference on Food Security, February 12<sup>th</sup> 2013, CII, India Habitat Centre, Silver Oak, Lodhi road, New Delhi.
3. National Summit on Disaster Management, Dec 18-19<sup>th</sup> 2012, India Habitat Centre, Lodhi road, New Delhi.
4. Energy Security Conference 2012, Dec 13<sup>th</sup> 2012, India Habitat Centre, Lodhi road, New Delhi.
5. National Conference on Ushering Second Green Revolution in Indian Agriculture through Public-Private Partnership 11<sup>th</sup> December 2012, Vigyan Bhavan: New Delhi.
6. INSA, Public Lecture, Science for Sustainable Development: Industrial and Rural by Prof. R. Chidambaram (19<sup>th</sup> Sept 2012).
7. Sustainable Green Revolution, PHD House, New Delhi (30<sup>th</sup> July 2012).
8. National Workshop on ‘Save mother earth’, Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 22<sup>nd</sup> April 2011.
9. National Workshop on ‘Chemistry in our lives’, Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar, March 14<sup>th</sup> 2011.
10. National Workshop on ‘Recent trends in Engineering technology’, Department of Computer Science and Printing Technology, Guru Jambheshwar University of Science and Technology, Hisar, March 15<sup>th</sup> 2011.
11. Public awareness programme on “Atom for Peace”, Indian Association for Radiation Protection, 15.4.08-17.4.08, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India
12. Nuclear energy and environment, (15<sup>th</sup> Dec, 2007), Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, India.

13. National workshop on E-waste management (25<sup>th</sup> October 2007) Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, India.
14. Workshop on Sustainable Resource Management (27<sup>th</sup> April 2007), DAAD, India International Centre, New Delhi, India
15. Accelerator Mass Spectroscopy (23<sup>rd</sup> September, 2005), Nuclear Science Centre, New Delhi
16. Patent Awareness Workshop (25<sup>th</sup> August 2001), Guru Jambheshwar University, Hisar, Haryana.
17. Accelerator Mass Spectroscopy (5<sup>th</sup> October, 2001), Nuclear Science Centre, New Delhi.
18. Remote Sensing and GIS for Natural Resource Management, Haryana State Remote Sensing Application Centre (11-15 December 2000) HARSAC, Hisar, Haryana.

#### **Other Science outreach activities**

1. World Wetland Day, Teleconference, EMPC, IGNOU, New Delhi, Feb 2<sup>nd</sup> 2013
2. Quiz master, Conducted quiz for Earth Day, VDJS, Hisar, 21<sup>st</sup> April 2012.
3. Conducted stage Earth Day, Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 22<sup>nd</sup> April 2011.
4. Quiz master, Conducted quiz for Earth Day, Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 22<sup>nd</sup> April 2011.
5. Conducted stage Multidisciplinary approaches in frontier areas of Environmental Science and Engineering. Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 4-5<sup>th</sup> March 2011.
6. Organizing member, National workshop on E-waste management (25<sup>th</sup> October 2007) Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar.
7. Conducted stage Earth Day, Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 22<sup>nd</sup> April 2000.

#### **Invited lectures: Resource person in universities**

1. UGC Academic Staff College, GJUST, Hisar May 19<sup>th</sup> 2012 Nutrition Security and Sustainable Development
2. UGC Academic Staff College, Kurukshetra University, Kurukshetra August 4<sup>th</sup> 2012 Nutrition Security and Sustainable Development

#### **International Collaborators:**

- Professor Judith Ann McKenzie, Department of Earth Sciences, Swiss Federal Institute of Technology, ETH Zurich, Switzerland
- Dr. Natuschka M. Lee, Technical University of Munich, Freising, Germany
- Dr. Lise Ovreas, Centre of Geobiology, University of Bergen, Bergen, Norway
- Dr. Ingunn Hindenes Thorseth, Centre of Geobiology, University of Bergen, Bergen, Norway
- Dr. Joyanto Routh, Stockholm University, Sweden

#### **Professional Affiliation:**

- Life Member, Swisssed, Swiss Sedimentologists group, Switzerland
- Fellow, The Earth Science Society, India
- Life Member, Indian Science Congress Association, Calcutta
- Life member, SPSTI Society for promotion of science and technology in India