**Dr. Puspendu Bhunia**

**Assistant Professor**

**Indian Institute of Technology Bhubaneswar**

**Samantapuri, Bhubaneswar-751 013**

E-mail: [pbhunia@iitbbs.ac.in](mailto:pbhunia@iitbbs.ac.in) ; [puspendubhunia@gmail.com](mailto:puspendubhunia@gmail.com)

**EDUCATION**

**INDIAN INSTITUTE OF TECHNOLOGY Kharagpur, India**

**Doctor of Philosophy in Civil Engineering**  *July 2008*

* Specialization: Environmental Engineering and Management
* Dissertation: Biomass granulation and treatment of sewage using UASB reactor.

**M.Tech.** (Master of Technology) **in Civil Engineering**  *June 2004*

* Specialization: Environmental Engineering and Management
* Dissertation: Management of Exhausted CalSiCo – An Effective low cost Adsorbent for Removal of Arsenic from Ground Water.

**BENGAL ENGINEERING COLLEGE Shibpur, Calcutta**

**Bachelor of Engineering** (B.E.) **in Civil Engineering** *March 2002*

**PROFESSIONAL EXPERIENCE**

**INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR Bhubaneswar, India**

**School of Infrastructure**

**Assistant Professor, Department of Civil Engineering** July 2009-till date

* Taking B.Tech. classes on Water and wastewater Engg., Environmental Engineering, Surveying,
* Guiding Ph.D. and B.Tech. students, Conducting Research Projects and consultancy works related to Civil Engineering
* Various administrative works related to the Institute

**NATIONAL INSTITUTE OF SCIENTIFIC RESEARCH (INRS)**

**UNIVERSITY OF QUEBEC Quebec, Canada**

**Centre for Earth, Soil, and Environment (ETE)** *August 2008-July2009*

**Research**

* Determination of Greenhouse gas emissions from biological wastewater treatment.
* Greenhouse gas estimation during treatment of municipal solid waste.
* Greenhouse gas estimation during composting and landfilling of biological wastes.
* Assisting Masters and PhD students related to their research work.

**MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY Allahabad, India**

**Lecturer, Dept. of Civil Engineering** *December 2007-July 2008*

* Taking B.Tech. classes on Environmental Engineering, Engineering Drawing, and Environmental Planning and Management
* Worked as an active member of Institute Library working committee
* Worked as a member of Civil Engineering Society working group

**INDIAN INSTITUTE OF TECHNOLOGY** **Kharagpur, India**

**Research**  *July 2004-November 2007*

* Responsible for all aspects of research design, experimentation, analysis, implementation and reporting of a major research project funded by U.G.C.
* Assisting project staff for the analysis of experiments and instruments handling.
* Assisting M.Tech. students working in the field of microbial fuel cell and development of reactors for on-site treatment of domestic wastewater.
* Discussion on research issues relevant to the organization.

**Instructor** *June 2003-November 2007*

* Teaching instructor of first year basic engineering drawing class.
* Led class discussion, delivered class presentation.
* Assist with evaluation of assignments, grading, and tutoring.

**PUBLICATIONS**

**Refereed publications**

***International Journal***

Pilli, Sridhar; **Bhunia, Puspendu**; Yan, Song; Tyagi, R. D.; Surampalli, R. Y. Methodology for the quantification of greenhouse gas emissions during land application of sewage sludge (2014). *Greenhouse Gas Measurement and Management*, 4, 178-200. **[Taylor&Francis]**

Verma, A.K., **Bhunia, P.**, Dash, R.R., 2015. Performance of UASB Reactor Treating Synthetic Textile Wastewater: Effect of Physico-chemical Pre-Treatment.*Desalin. Water Treat.* DOI:10.1080/19443994.2015.1017739 **[Taylor&Francis]**

Rout, P.R., **Bhunia, P.**, Dash, R.R., (2015). Effective utilization of a sponge iron industry by-product for phosphate removal from aqueous solution: A statistical and kinetic modelling approach. *Journal of the Taiwan Institute of Chemical Engineers,* 46, 98–108. **[Elsevier]**

Verma, A.K., **Bhunia, P.**, Dash, R.R., 2014. Chemical coagulation and sonolysis for total aromatic amines removal from anaerobically pre-treated textile wastewater: A comparative study. *Advances in Environmental Research*, 3(4), 293-306. **[Techno Press]**

Rout, P.R., Dash, R.R., **Bhunia, P.** (2014). Modelling and packed bed column studies on adsorptive removal of phosphate from aqueous solutions by a mixture of ground burnt patties and red soil. *Advances in Environmental Research*, 3(3), 231-251. **[Techno Press]**

Rout, P.R., **Bhunia, P.**, Dash, R.R., (2014). Modeling isotherms, kinetics and understanding the mechanism of phosphate adsorption onto a solid waste: Ground Burnt Patties. *J. Environmental Chem. Engg.*, 2(3), 1331-1342. **[Elsevier]**

Verma, A.K., **Bhunia, P.**, Dash, R.R., Tyagi, R.D., Surampalli, R.Y., Zhang, T.C., 2014. Sonolytic decolorization of textile wastewater containing a mixture of reactive, acid and disperse dyes. *CLEAN- Air Water Soil,* DOI: 10.1002/clen.201400256. **[Willey]**

Verma, A.K., **Bhunia, P.**, Dash, R.R., 2014. Reclamation of wastewater using composite coagulants: a sustainable solution to the textile industries. *Chem Eng Trans.,* 42, 175-180**. [AIDIC]**

Verma, A.K., **Bhunia, P.**, Dash, R.R., Tyagi, R., D., Surampalli, R.Y., Zhang, T.C., 2014. Effects of physico-chemical pre-treatment on the performance of an upflow anaerobic sludge blanket (UASB) reactor treating textile wastewater: application of full factorial central composite design. *Can J Chem Eng.,* **(*Accepted*).** **[Willey]** **DOI: 10.1002/cjce.22168**

Rout, P.R., **Bhunia, P.**, Dash, R.R., (2014). A mechanistic approach to evaluate the effectiveness of red soil as a natural adsorbent for phosphate removal from wastewater. *Desalin. Water Treat.* doi: 10.1080/19443994.2014.881752 **[Taylor&Francis]**

Verma, A.K., **Bhunia, P.**, Dash, R.R., 2014. Carbonaceous organics removal kinetics in an upflow anaerobic sludge blanket (UASB) reactor treating physico-chemically pre-treated textile wastewater. *Desalin. Water Treat.* doi: 10.1080/19443994.2014.888687 **[Taylor&Francis]**

Verma, A. K., **Bhunia, P,** Dash, R.R.. Applicability of a new pre-hydrated industrial grade polyaluminium salt for the decolourisation of textile wastewater (2014). *Desalination and Water Treatment,* 52 (22-24), 4553-4561.**[Taylor&Francis]**

Dash, R.R., Dash, R.R., Verma, A.K., **Bhunia, P.** Sand filtration: An effective post treatment option for aerobically treated wastewater (2012), *Journal of Industrial Research and Technology*, 2(2), 81-87. **[Hatam]**

Verma, A. K., **Bhunia, P,** Dash, R.R.. Decolourisation and Chemical Oxygen Demand Reduction Efficiency of Ferrous Suphate for the Treatment of Synthetic Textile Wastwater-A Comprehensive Study (2012), *International Journal of Geotechnics and Environment*, 4(1), 73-87. **[Serials]**

Verma, A. K., **Bhunia, P,** Dash, R.R.. [Effectiveness of Aluminum Chlorohydrate (ACH) for Decolorization of Silk Dyebath Effluents](http://pubs.acs.org/doi/abs/10.1021/ie301201r) (2012), *Industrial & Engineering Chemistry Research*, 51(25), 8646-8651. **[ACS]**

Verma, A. K., **Bhunia, P,** Dash, R.R.. A review on chemical coagulation/flocculation technologies for removal of colour from textile wastewaters (2012). *Journal of Environmental Management*, 93, 154-168. **[Elsevier]**

Verma, A. K., **Bhunia, P.,** Dash, R.R. Decolorization and COD Reduction Efficiency of Magnesium over Iron based Salt for the Treatment of Textile Wastewater Containing Diazo and Anthraquinone Dyes (2012). *International Journal of Chemical and Biological Engineering*, 6, 116-123. **[WASET]**

Verma, A. K., **Bhunia, P.,** Dash, R.R. Supremacy of magnesium chloride for decolourisation of textile wastewater: A comparative study on the use of different coagulants (2012). *International Journal of Environmental Science and Development*, 3(2), 118-123. [**IACSIT]**

Pilli, Sridhar; **Bhunia, Puspendu**; Yan, Song; LeBlanc, R. J.; Tyagi, R. D.; Surampalli, R. Y. Ultrasonic pretreatment of sludge: a review (2011). *Ultrasonics Sonochemistry*, 18(1), 1-18. **[Elsevier]**

[**Bhunia,**](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=ASCERL&possible1=Bhunia%2C+Puspendu&possible1zone=author&maxdisp=25&smode=strresults&aqs=true) **P.**,  [Yan](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=ASCERL&possible1=Yan%2C+S.&possible1zone=author&maxdisp=25&smode=strresults&aqs=true), S.,  [LeBlanc](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=ASCERL&possible1=LeBlanc%2C+R.+J.&possible1zone=author&maxdisp=25&smode=strresults&aqs=true), R. J.,  [Tyagi](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=ASCERL&possible1=Tyagi%2C+R.+D.&possible1zone=author&maxdisp=25&smode=strresults&aqs=true), R. D., [Surampalli](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=ASCERL&possible1=Surampalli%2C+R.+Y.&possible1zone=author&maxdisp=25&smode=strresults&aqs=true), R. Y., Zhang, [T. C.](http://scitation.aip.org/vsearch/servlet/VerityServlet?KEY=ASCERL&possible1=Zhang%2C+T.+C.&possible1zone=author&maxdisp=25&smode=strresults&aqs=true) Insight into Nitrous Oxide Emissions from Biological Wastewater Treatment and Biosolids Disposal (2010). *Pract. Periodical of Haz., Toxic, and Radioactive Waste Mgmt. (ASCE), 14 (3), 158-169*. **[ASCE]**

**Bhunia, P.** and Ghangrekar, M.M. Simulation of Granulation Index and its Utility for Predicting Percentage Granules in UASB Reactors (2009). [*World Review of Science, Technology and Sustainable Development, 6 (2/3/4), 127 - 143*](http://www.inderscience.com/browse/index.php?journalID=136&year=2009&vol=6&issue=2/3/4)*.* **[Inderscience]**

**Bhunia, P.** and Ghangrekar, M.M. Influence of Biogas Induced Mixing on Granulation in UASB Reactors (2008). *Biochemical Engineering Journal, 41(2), 136-141.* **[Elsevier]**

**Bhunia, P.** and Ghangrekar, M.M. Statistical Modeling and Optimization of Biomass Granulation and COD Removal in UASB Reactors Treating Low Strength Wastewaters (2008).*Bioresource Technology, 99 (10), 4229-4238.* **[Elsevier]**

**Bhunia, P.** and Ghangrekar, M.M. Analysis, Evaluation, and Optimization of Kinetic Parameters for Performance Appraisal and Design of UASB Reactors (2008). *Bioresource Technology, 99 (7), 2132-2140.* **[Elsevier]**

**Bhunia, P.** and Ghangrekar, M.M. Effects of Cationic Polymer on Performance of UASB Reactors Treating Low Strength Wastewater (2008). *Bioresource Technology, 99(2), 350-358.* **[Elsevier]**

**Bhunia, P.** and Ghangrekar, M.M. Required minimum granule size in UASB reactor and characteristics variation with size (2007). *Bioresource Technology,* 98(5), 994-999*.* **[Elsevier]**

**Bhunia, P.** and Ghangrekar, M.M. Comments on “Enhanced granulation by natural ionic polymer additives in UASB reactor treating low-strength wastewater” a full paper published in *Water Research* **39** (16): 3801-3810, 2005 by Manoj K. Tiwari, Saumyen Guha, C. S. Harendranath, and Shweta Tripathi (2006). *Water Research,* 40(7), 1505-1506. **[Elsevier]**

**Bhunia, P.,** Pal, A., and Bandyopadhyay, M. Assessing Arsenic Leachability from Pulverized Cement Concrete Produced from Arsenic-Laden Solid CalSiCo-Sludge (2007). *Journal of Hazardous Materials*, 141(3), 826-833. **[Elsevier]**

***National Journal***

**Bhunia, P.** and Bandyopadhyay, M. Leaching of As (III) and As (V) from exhausted CalSiCo- A case study (2004). *Journal of Environmental Science and Engineering*, 46 (1), 1-9. **[NEERI]**

***Book Chapters***

**Bhunia P. (2014).** Fundamentals of Biological Treatment. In: *Ahuja S. (ed.) Comprehensive Water Quality and Purification*, vol. 3, pp. 47-73. **United States of America: Elsevier.**

**Puspendu Bhunia**, Rojan P. John, S. Yan, R.D. Tyagi & R.Y. Surampalli (2010). Algal Biodiesel Production: challenges and opportunities. In *Bioenergy and Biofuel from Biowastes and Biomass*. (eds. Samir. K. Khanal et al.). **American Society of Civil Engineers(ASCE)**. pp-313.

Rojan P. John, **Puspendu Bhunia**, S. Yan, R.D. Tyagi & R.Y. Surampalli (2010). Microalgal Ethanol Production: A New Avenue for Sustainable Biofuel Production. In *Bioenergy and Biofuel from Biowastes and Biomass*. (eds. Samir. K. Khanal et al.). **American Society of Civil Engineers(ASCE)**. pp-377**.**

Prangya Ranjan Rout, Rajesh Roshan Dash and **Puspendu Bhunia** (2014).Nutrient Removalfrom Domestic Wastewater: An Environmental Biotechnology Approach. In: *Dash and Das (ed.) Advances in Environmental Sciences and Engineering*, pp-232, **Astral Publication, India.**

Pramit Sarkar, Akshaya Kumar Verma, **Puspendu Bhunia** and Rajesh Roshan Dash (2014). Adsorption of Reactive Red 120 from Aqueous Solution by Locally Available Modified Adsorbents. In: *Dash and Das (ed.) Advances in Environmental Sciences and Engineering*, pp-250, **Astral Publication, India.**

***International Conference***

PR Rout, RR Dash, **P Bhunia**. Analyzing Simultaneous Heterotrophic Nitrification and Aerobic Denitrification Potential of a Newly Isolated Bacterium, Bacillus cereus strain GS5. Paper published in “*2nd International Conference on Advances in Civil, Structural and Environmental Engineering (****ACSEE 2014***)” October 25-26, 2014 in Zurich, Switzerland.

P.R. Rout, **P.Bhunia**, R.R. Dash. Bio-denitrification of nitrate rich aqueous solution using waste organic solid substances (WOSS) as carbon source and bio-film carrier. Paper published in the proceedings of the 7th *International congress of Environmental Research,* 2014, T093, p.559.

Verma, A. K., **Bhunia, P.,** Dash, R.R. Reclamation of wastewaters using composite coagulant: a sustainable solution to the textile industries. Paper presented in the *8th Conference on sustainable development of energy, water and environment systems (SDEWES2013-0075), Sponsored by UNESCO*, September 22-27, 2013, Dubrovnik, Croatia.

PR Rout, RR Dash, **P Bhunia**. Adsorptive Phosphate Removal from Wastewater Using Red Soil as a Natural Adsorbent: Kinetics and Isotherm Studies. Paper published in the “*1st International Forum on Asian Water environmental Technology (****1st IFAWET****)*”, December 18-20, 2013 in New Delhi, India

A.K. Verma, P.Bhunia, R.R. Dash. Decolourisation of textile wastewaters using Ultrasonication, Symposium on Sustainable Infrastructure Development, IIT Bhubaneswar, February 7-9, 2013, p. 161-167.

P.R. Rout, R.R. Dash, P.Bhunia. Biotechnology of nutrient removal from domestic wastewater: A review, Symposium on Sustainable Infrastructure Development, IIT Bhubaneswar, February 7-9, 2013, p. 168-176.

Rajesh Roshan Dash, Rakesh Roshan Dash, Akshaya Verma, **Puspendu Bhunia**. Sand filtration: An effective post treatment option for aerobically treated wastewater. Paper published in the proceedings of the *International conference of Environmental Research,* 2012, ICER/PS/O/577/12, 22nd -24th November, 2012, Terengganu, Malaysia.

Verma, A. K., **Bhunia, P.,** Dash, R.R. Supremacy of magnesium chloride for decolourisation of textile wastewater: A comparative study on the use of different coagulants. Paper presented in the *JCESD 2012 1st Journal conference on Environmental Science and Development*, 7th-8th April, 2012, Bangkok, Thailand.

Akshaya Kumar Verma, **Puspendu Bhunia**, Rajesh Roshan Dash, Decolourisation of simulated reactive dye bath effluents using aluminium and mangnesium based pre-hydrated salts, *International Symposium of Southeast Asian water Environment*, 8th-10th November, 2012, Hanoi, Vietnam, Vol.10 (Part I) 179-186.

Dash, R.R., **Bhunia, P.**, Dash, R.R. Post Treatment of effluent from oxidation ditch by sand filtration. Paper published in the proceedings of the *International symposium on Southeast Asian Water Environment*, Vol. 9, p. 1-6, 2011 (Part II), Bangkok, Thailand..

**Bhunia, P.,** Verma, A. K., Dash, R.R. Performance of ferrous sulphate in combination with calcium hydroxide for removal of colour and COD of synthetic textile wastewater. paper published in the *International Congress of Environmental research, ICER-11*, PS-1279, p.323, **Surat, India**, December 15-17, 2011.

Dash, R.R., **Bhunia, P.**, Dash, R.R. Post treatment of effluent from oxidation ditch by sand filtration. Paper published in the *9th International Symposium on Southeast Asian Water Environment*, vol.9, 2011 (partII), Bangkok, Thailand, December 1-3, 2011.

**Bhunia, P.,** Shinde, B.V., and Ghangrekar, M.M. Bio-energy from sewage treatment: The technologies for future. Paper published in proceedings of the *International conference on CENeM-2007*, Bengal Engineering and Science University, **Shibpur, India,** January 11-14, 2007.

**Bhunia, P.** and Ghangrekar, M.M. Effect of cationic polymer on biomass granulation in UASB reactors treating domestic sewage. Paper presented at the *IWA 3rd International Young Researchers Conference* (2006): Nanyang Technological University, **Singapore**, May 24- 26, 2006.

**Bhunia, P.** and Ghangrekar, M.M. Performance of UASB-UAF system for two stage anaerobic treatment of domestic sewage. Paper presented at the *9th International conference on “ECOSAN” (2005)*: IWWA, **Mumbai, India**, November 25-26, 2005.

Ghangrekar, M.M. and **Bhunia, P.** Design and start-up of UASB reactor. Paper presented at the International conference on *Advances in Industrial Wastewater Treatment*, (2005). Anna University, **Chennai, India**, February 9-11, 2005.

**RESEARCH INTERESTS**

* Aerobic and anaerobic granulation for low and high strength wastewater
* Waste management, and pollution control
* Physicochemical and microbial processes for application to waste reduction and treatment
* Biological Nitrification and Denitrification
* Biological treatment of industrial wastewater
* Bioremediation of solid wastes

**SOCIAL & ACADEMIC SERVICES**

* Senior member of Asia-Pacific Chemical, Biological & Environmental Engineering Society (APCBEES), **Hong Kong**.
* Member of Scientific and Technical Committee & Editorial Review Board on Engineering and Applied Sciences of World Academy of Science, Engineering and Technology (WASET), **USA.**
* Member of The Institution of Engineers (**India**)
* Member of International Advisory Board and Editorial Board of Institute of Research and Journals, **INDIA**
* Reviewers of following International journals:

1. **Journal of Environmental Management**
2. **CLEAN-Soil, Air, Water**
3. **Water Science and Technology**
4. **Bioresource Technology**
5. **Environmental Progress**
6. **Journal of Hazardous, Toxic and Radioactive Waste Management**
7. **Journal of Hazardous Materials**
8. **Biochemical Engineering Journal**
9. **Environmental Technology**
10. **Chemical Engineering Journal**
11. **International Journal of Environmental Science and Development**
12. **International Journal of Environmental Research and Development**

**PROFESSIONAL SERVICES**

* **Serving as Associate Editor of ASCE Journal of Hazardous, Toxic and Radioactive Wastes**
* Serving as **Associate,Global Institute for Energy, Environment, and Sustainability (GIEES)**
* Delivered invited lectures on " ***Water Treatment Plant Layouts, Hydraulics and Engineering*** " in Refresher course on Water Works Supervisors. 21.11.2011-20.12.2011 at P.H.E. Training Centre, Palasuni, Bhubaneswar.
* Served as External examiner in Civil Engineering Department of VNIT, Nagpur to evaluate M.Tech. by research.

**SEMINARS/CONFERENCES/WORKSHOPS ORGANIZED**

* Organized a workshop on ''Indian Water Management in 21st Century (IWM-2011)" at IIT Bhubaneswar from 27-12-2011 to 29.12.2011.

**CONSULTANCY/DEVELOPMENT PROJECTS**

* Completed consultancy project on Remedial measures for horizontal and vertical cracks developed in hospital building at J. K. Pur, Sponsored by ESIC, Bhubaneswar, Duration: 6 months, Total amount: Rs. 4.4 Lakhs.
* Completed proof checking of proposed residential quarters at HAL, Sunabeda, Orissa, Duration: 6 months, Total amount: Rs. 5.0 Lakhs