

Curriculum Vitae

Subhash Chandra

School of Environmental Engineering,

Indian Institute of Technology Kharagpur, West Bengal, India – 721302

Email: subhash2k6@gmail.com/ subhash08037@gmail.com

Phone: +91 – 8789772269/ 9933985929

Skype Id: subhash08037@gmail.com

Education	PhD in Environmental Engineering (Thesis submitted)	
2014 – 2020	<ul style="list-style-type: none">Institute: Indian Institute of Technology Kharagpur	Kharagpur West Bengal – 721302
2012 – 2014	M. Tech in Environmental Engineering <ul style="list-style-type: none">Institute: Indian Institute of Technology (ISM) DhanbadSecured overall CGPA 8.5	Dhanbad Jharkhand – 826004
2008 – 2012	B. Tech in Mechanical Engineering <ul style="list-style-type: none">Institute: SHIATS, AllahabadSecured overall CGPA 9.81	Allahabad, Uttar Pradesh – 211007
2006 – 2008	Higher Secondary (10+2) <ul style="list-style-type: none">Science, secured 72 % overallBoard: CBSE	RKSVM, Dhanbad, Jharkhand – 826001
2006	Senior Secondary (10th) <ul style="list-style-type: none">Secured 80 % overallBoard: CBSE	RKSVM, Dhanbad, Jharkhand – 826001

Research	Doctoral Thesis
	Title: Development of waste to biochar pyrolysis unit and study of the use of biochar for reclamation of mine soil
	Supervisor: Dr. Jayanta Bhattacharya Professor, Department of Mining Engineering and School of Environmental Science and Engineering Indian Institute of Technology Kharagpur
	Description: Biochar is derived through the pyrolysis of biomass waste in a limited

oxygen environment. Biochar is a black carbon-rich porous material. Biochar is laden with the essential nutrients required for the plants in the soil along with having high specific surface area. Biochar application in the soil can reduce dependency on the fertilizer. Biochar also have potential to be used in the degraded and contaminated soils as an amending material due to having ability to adsorb the metals and organic pollutants on within its porous surface, consequently supplying the nutrients in the soil. In the present research work, biochar was used as an ameliorating material in the mine-soil contaminated with the heavy metals for the reclamation purpose. Results demonstrated that biochar application in the mine-soil significantly improved the physicochemical properties of the soil along with reducing the availability of the heavy metals for the plants. Biochar application significantly improved the rate of the reclamation process to achieve the post-use of the soil.

<p>Technical Skills</p>	<p>Operational techniques</p> <ul style="list-style-type: none"> ➤ Designing experiments. ➤ Specialization in pyrolysis set-up development. ➤ Energy generation and bio-oil recovery from biomass waste. ➤ Sampling design and characterization of soil and water samples. ➤ Development of carbon-composites. ➤ Field study and greenhouse based pot-culture study. ➤ Optimization of process parameters. ➤ Statistical analysis of large set of data. ➤ Reclamation and remediation of the contaminated and degraded lands. ➤ Heat assessment and heat transfer measurement through the complex structures. <p>Analytical techniques</p> <ul style="list-style-type: none"> ➤ Measurement of BOD and COD of water samples. ➤ Physicochemical characterization of soil samples. ➤ Material characterization techniques like FTIR, XRD, SEM, Raman spectroscopy, GCMS. ➤ Measurement of Na, K, Ca, Mg, and P present in the aqueous solution. ➤ Measurement of heavy metals such as Fe, Mn, Cr, Cd, Ni, Co, Hg, Zn, and Pb in the soil and water samples. ➤ Measurement of PM₁₀, PM_{2.5}, CO, and CO₂ in air.
<p>Instrument Handling</p>	<ul style="list-style-type: none"> ➤ Atomic Absorption Spectroscopy (AAS) ➤ Inductively Coupled Plasma Spectroscopy (ICP-MS) ➤ X-ray Diffractometer (XRD) ➤ X-ray Fluorescence (XRF) ➤ Total Organic Carbon Analyzer (TOC) ➤ Gas Chromatography (GCMS) ➤ Multiparameter water analysis ➤ UV-Spectrophotometer

	<ul style="list-style-type: none"> ➤ Total Kjeldahl Nitrogen Analyzer ➤ Thermogravimetric analyzer (TGA) ➤ Flame Photometer ➤ Particle size analyzer ➤ Zeta Potential
<p style="text-align: center;">Developmental Skills</p>	<ul style="list-style-type: none"> ➤ Project writing for receiving research grants and project report preparation. ➤ Laboratory development and detailed procedure for instrument procurement. ➤ Research article writing and publication. ➤ Working experience in organizing conference and workshops. ➤ Knowledge of EIA, EMP, and land acquisition and report preparation.
<p style="text-align: center;">Teaching Skills</p>	<p>Teaching Motivation</p> <ul style="list-style-type: none"> ➤ Dedicated, resourceful and goal-driven professional educator with a solid commitment to the social and academic growth and development of every student. ➤ Highly motivated, enthusiastic and dedicated educator who wants all student to be successful learners. ➤ Committed to creating a classroom atmosphere that is stimulating and encouraging to students. ➤ Superior interpersonal and communication skills to foster meaningful relationships with students. ➤ Demonstrated ability to consistently individualize instruction, based on student's needs and interests. <p>Subjects specialization</p> <ul style="list-style-type: none"> ➤ Water supply and Treatment ➤ Solid Waste Management ➤ Wastewater Treatment ➤ Fluid Mechanics and Machinery ➤ Engineering Thermodynamics ➤ Environmental Pollution and Control ➤ Groundwater and Hydrology ➤ GIS and Remote Sensing ➤ Engineering Graphics
<p style="text-align: center;">Computer Skills</p>	<ul style="list-style-type: none"> • Operating system: Windows 7 and Windows 10 • Software: Statistical software: SPSS, Origin Pro, R stats, and Minitab 18 Design software: Auto CAD, Solid works. MS-Office for document writing and presentation.
<p style="text-align: center;">Fellowship and Awards</p>	<ul style="list-style-type: none"> ➤ Research fellowship of Indian Institute of Technology Kharagpur ➤ Qualified Graduate Aptitude Test in Engineering (GATE) in years 2012, 2013, 2014, and 2015 (Mechanical Engineering) ➤ Bronze medalist in B. Tech Mechanical Engineering (2012 Batch, SHIATS Allahabad) ➤ Member of American Chemical Society

Publications

International Peer Reviewed Journals (As on 15th July, 2020, Total citations: 61; h-index = 3; I-10 index = 3, as per Google Scholar)

1. **Chandra, S.** and Bhattacharya, J., 2019. Influence of temperature and duration of pyrolysis on the property heterogeneity of rice straw biochar and optimization of pyrolysis conditions for its application in soils. *Journal of cleaner production*, 215, pp.1123-1139. **(I.F.: 7.49)**
2. **Chandra, S.**, Medha, I. and Bhattacharya, J., 2020. Potassium-iron rice straw biochar composite for sorption of nitrate, phosphate, and ammonium in soil for timely and controlled release. *Science of The Total Environment*, p.136337. **(I.F: 6.55)**
3. **Chandra, S.**, Singh, P.K., Tiwari, A.K., and Kumar, A., 2015. Evaluation of hydrogeological factors and their relationship with seasonal water table fluctuation in Dhanbad district, Jharkhand, India. *ISH Journal of Hydraulic Engineering*, 21(2), pp.193-206. **(I.F.: 1.04)**
4. Tiwari, A.K., **Chandra, S.**, Singh, P.K., and Ghosh, A., 2016. Assessment of groundwater level fluctuation by using remote sensing and GIS in West Bokaro coalfield, Jharkhand, India. *ISH Journal of Hydraulic Engineering*, 22(1), pp.59-67. **(I.F.: 1.04)**
5. Kumar, B., Anshumali, A.N., Shukla, K., **Chandra, S.**, Panigrahy, B.P. and Tiwari, A.K., 2015. Fluoride in Groundwater and its Health Hazards: A Review in Indian Scenario. *Global Sustainability Transitions: Impacts and Innovations*, pp.38-45.
6. Singh, P.K., Panigrahy, B.P., Tiwari, A.K., Chandra, S. and Kumar, B., Physico-Chemical Studies on Surface Water Quality in the Jharia Coal Field Region, Dhanbad. *Global Sustainability Transitions: Impacts and Innovations*. ISBN: 978-93-83083-77-

International Conferences

1. **Chandra, S.** and Bhattacharya, J., 2018, March. Effect of heating time and peak temperature of pyrolysis on biochar derived from rice husk. In *ABSTRACTS OF PAPERS OF THE AMERICAN*
-

CHEMICAL SOCIETY (Vol. 255). 1155 16TH ST, NW,
WASHINGTON, DC 20036 USA: AMER CHEMICAL SOC.

2. Chandra, S. and Bhattacharya, J., 2020, June. Volarization of industrial hardwood waste to produce biochar using an indigenously designed pyrolysis unit: Thermal and indoor air quality assessment and characterization of the product. In Abstracts of Papers of ACS 23rd Annual Green Chemistry Conference, Reston, VA, USA.
-

References

1. Dr. Jayanta Bhattacharya (PhD Supervisor)
Professor, Department of Mining Engineering
Indian Institute of Technology, Kharagpur, West Bengal -
721302, India
Email: jayantaism@gmail.com/ jayantab@mining.iitkgp.ernet.in
 2. Dr. Brajesh Kumar Dubey
Associate Professor, Department of Civil Engineering
Indian Institute of Technology, Kharagpur, West Bengal -
721302, India
Email: bkubey@gmail.com/ bkubey@civil.iitkgp.ernet.in
 3. Dr. Prasson Kumar Singh
Associate Professor, Department of Environmental Science and
Engineering
Indian Institute of Technology (ISM) Dhanbad, Jharkhand –
826004, India
Email: pks0506@yahoo.co.in/ pks0506@iitism.ac.in
 4. Dr. Abhijit Mukherjee
Associate Professor, Department of Geology and Geophysics
Indian Institute of Technology, Kharagpur, West Bengal -
721302, India
Email: abhijit@gg.iitkgp.ernet.in.
 5. Dr. Ashwani Kumar Tiwari
Assistant Professor, School of Environmental Science, JNU, New
Delhi
Email: ashwani.enviro@gmail.com
-