

Environmental Science and Engineering Department

Annual Report 2019-2020

Introduction and an Overview of the Department

The Environmental Science and Engineering Department (ESED) was established in 1985 as a centre (CESE) and got department status in 2019. The department has a core group of 15 faculty members with multi-disciplinary backgrounds and diverse research interests. In addition to the existing M.Tech. and Ph.D. programmes and the dual degree M.Sc. – Ph.D. programme, the department recently started the B. Tech.- M. Tech. dual degree programme in July 2018. In addition to these programmes, the department also offers a minor in Environmental Science and Engineering for undergraduate students from other departments in IIT Bombay. In addition to the above-listed academic programmes, ESED offers an Institute core course “Environmental Studies: Science and Engineering” to all undergraduate students. In addition, the department offers several elective courses for sensitizing students across all disciplines towards the urgent need for protection and restoration of the environment and the need for sustainable development.

The on-going research activities of the department are focused on addressing the priority areas (local and global) identified by major national agencies such as MHRD, CPCB, SPCB, MNRE, DBT, MoEF, CSIR, and DST. In addition, the department has already established strong links and collaborations with leading industries, academic institutions, and national/international agencies by conducting sponsored research and offering consultancy and technical services. The research activities of ESED are supported by excellent experimental and computational facilities, competent and dedicated technical staff, and high-quality students. The department is also actively engaged in organizing workshops and CEP courses for the benefit of professional from other academic institutions, industries, and governmental sectors.

Academic Programmes

ESED currently offers M. Tech., Ph. D., M.Sc.-Ph. D. and B.Tech.-M.Tech. programmes in Environmental Science and Engineering with a strong focus in teaching and research.

Degrees Awarded last year	
M. Tech:	10
Ph. D:	6
M.Sc:	4
M.Sc.-Ph.D:	1
M.Tech.-Ph.D:	1
M.S. by Research:	1

Scholarships: Information is provided in the table given below.

Category	Number of Students Admitted Under Each Programme in 2019		
	<u>M. Tech</u>	<u>Ph.D</u>	<u>M.Sc.-Ph.D.</u>
Institute Teaching Assistance (TA)	21	6	9
External Sponsored College Teacher (CT) Industry	-	-	-
Project Sponsored (PS)/TAP	-	5	-
UGC/CSIR/DBT / QIP/CPHEO fellowship holders	-	6	-
Foreign National (School)	1	-	-
Foreign National (SF)	1	-	-

R&D Activities

Thirteen new projects have been awarded in 2019-2020. The details of the projects are given below.

Sponsored Research Projects

Sponsored Research Projects: 42

New: 13

On-going: 19

Completed: 10

Faculty Involved: 15

Sr.No.	Project Title	Sponsoring Agency	Project Status
1.	Application of chlorophyll sensitised TiO ₂ in photocatalytic degradation of recalcitrant organic pollutants with visible light	SERB	New
2.	Coping with climate: assessing policies for climate change adoption and transport sector mitigation in Indian cities (CLIMATRANS)	Research Council of Norway, Norway	Completed
3.	Appraisal of options for resource recovery and recycling from sewage sludge	DST	New (funding awaited)
4.	Conversion of wet waste to fuel and value-added products using hydrothermal carbonization	DST-UKIERI	New
5.	Characterization of grey water and development of cost-effective systems for grey water recycling	TCTD	On-going
6.	Valorising waste from sugar cane industries via innovations in pretreatment bioproduction and process intensification	DBT	On-going
7.	Optimized thermal utilization of municipal solid waste derived fuel in India	DST	On-going
8.	Development of household or community composting system for food waste (MSW) recycling	TCTD	Completed
9.	Longitudinal effects of air pollution exposures on lung growth and development of biomarker of lung function deficit in	DBT-Welcome Trust	New

	urban children		
10.	Understanding particle toxicity and its association with chemical constituents of ambient particulate matter in India	DST	New
11.	Assessment of ambient air pollution exposures in a cohort of adult women in three metropolitan cities	IUF, Germany	On-going
12.	Measurement of real-world emission factors and estimating vehicular exhaust emissions using roadside and roadway tunnel studies (as part of DST-CoE in Climate Studies project)	DST	On-going
13.	Carbonaceous emissions measurement and characterization from residential cooking, open-field agricultural fires and brick kilns in Western India (as a part of NCAP-COALESCE project)	MoEFCC	On-going
14.	Mapping of open-cast mines in Southern-Western India and characterization of air pollution emissions from mining activities	IRCC, IIT Bombay	On-going
15.	Indoor and outdoor air pollution exposures in urban slums in Mumbai	IRCC, IIT Bombay	Completed
16.	Characterization and quantification of particulate matter emissions from on-road vehicles in Maharashtra	IRCC, IIT Bombay	Completed
17.	Study of cookstoves for enhanced thermal efficiency and reduced pollutant emission for large scale adoption in rural areas	IRCC, IIT Bombay	On-going
18.	Application of nanoparticles in ESP for inactivation of microorganisms and degradation of VOCs for air purification	SERB	On-going
19.	Optimizing co-digestion and pre-treatment of organic fraction of municipal solid waste and sewage sludge for maximum biogas production	SERB	On-going
20.	Assessment of municipal solid waste based biogas plants in India	Tata Centre for Technology and Design	Completed
21.	Articulation of the policy gaps and recommendations for policy intervention aimed at minimization of non-scientific management and littering of non-biodegradable polymeric wastes in the state of Maharashtra	United Nations Environment Plan (UNEP)	On-going
22.	Rejuvenation of blue-green spaces in	Earthwatch Institute	On-going

	metropolitan Mumbai through implementation of environmental technologies: Case studies on Powai Lake and Banganga Lake	India Trust	
23.	Capacity building in sustainability and environmental management” (CapSEM)	European Commission under European Region Action Scheme for the Mobility of University Students (ERASMUS +) programme	Completed
24.	Mapping flood risk in data poor regions enforcing combined geomorphic and socio-economic indicators: An application to Jagatsinghpur District Odisha	STC-IITB (ISRO)	New
25.	DST-Centre of excellence in climate studies, IIT Bombay	Department of Science and Technology, GoI	On-going
26.	Web-based flood information system under changing climate: A demonstration on the Kosi River Bihar India	IRCC Internship project, IIT Bombay	Completed
27.	A comprehensive mapping of flood risk in changing climate: An application to Jagatsinghpur district, Orissa	STC-IITB (ISRO)	Completed
28.	Autonomous wireless sensor network for real-time water quality monitoring	Department of Science and Technology, GoI	New
29.	Impact of climate change on water resources in river basins from Tadri to Kanyakumari	Ministry of Water Resources (MoWR), GoI	On-going
30.	Coupled human and natural systems environment (CHANSE) for water management under uncertainty in the Indo-Gangetic Plain	Ministry of Earth Sciences (MoES), GoI (Indo-UK)	Completed
31.	Monitoring and modelling of the Mahanadi river basin in preparation of the SWOT	DST-CNRS Targeted Programme, GoI	New
32.	Removal of micropollutants from water using TiO ₂ nanocomposites	WTI, DST	Completed
33.	Characterization of grey water and development of cost-effective systems for grey water recycling	TCTD, IIT Bombay	On-going
34.	Development of catalytic membranes based on carbon nanomaterials for	DST	On-going

	effective operation of membrane-based water treatment units		
35.	New generation membranes with high flux and better selectivity for the removal of emerging contaminants, micro-, and nanoplastics	IRCC	On-going
36.	Micro-plastic and membrane fouling detection by FTIR mapping	IRCC	New
37.	A membrane-based water recycling system (MWRS) for space exploration	ISRO	New(funding awaited)
38.	Metal doped laser induced Graphene (LIG) conductive membranes and surfaces for the environmental remediation	SERB	New
39.	Integrated low pressure membrane system (ILPMS) for water purification and disinfection	DST	New
40.	Removal and mineralization/recovery of perfluoroalkyl substances (PFASs) from aqueous media using integrated ion-exchange/adsorption	IRCC, IIT Bombay	New
41.	UV-LED based advanced redox processes for removal of persistent organic pollutants	IRCC, IIT Bombay	New
42.	Clean coal utilization of Indian coals: carbon capture and pollution control	DST	On-going

Consultancy Projects:

A total of 20 consultancy jobs was undertaken by 8 faculty members.

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or On-going)
1.	Request for advisory services for the project adequacy study of effluent treatment plant	M/s. SAGE LLP	Completed
2.	Approval of detailed structure drawings & process design for MBBR based 2 MLD STP in Chembur (M/East Ward)	M/s. Maljal Technologies, Pune	Completed

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or On-going)
3.	Adequacy assessment of effluent treatment of Elppe Chemicals Pvt Ltd at Roha	M/s. SAGE (Sustainable Approach for Green Environment) LLP, Mumbai	Completed
4.	Mumbai trans-harbour link project: Conducting Mahul-Trombay creek pollution level study for preparing proposal of effluent treatment plants	Mumbai Metropolitan Region Development Authority, Govt. of Maharashtra, Mumbai	On-going
5.	DRD/ES/AKD-6/19-20 - Advisory services for the project "adequacy study of ETP at Vidhi Dyestuffs Manufacturing Ltd. Roha	M/s. SAGE (Sustainable Approach for Green Environment) LLP, Mumbai	Completed
6.	DRD/ES/SK-4/19-20 - Technical audit report for 140 MLD water treatment plant scheme for Vasai Virar City Municipal Corporation	M/s. Gharpure Engineering and Construction Pvt. Ltd., Pune	Completed
7.	Performance audit of air pollution control system of Viraj Profiles Pvt. Ltd., Palghar, MH	SAGE, Mumbai	Completed
8.	Preliminary assessment of pollutants from an integrated refinery-cum-petroleum complex at Ratnagiri: Assessment of air emissions and its impact on ambient air quality	Ratnagiri Refinery and Petrochemicals Ltd., Mumbai	Completed
9.	Environmental impact assessment of a petrochemical project for Ratanagiri Refinery and Petrochemical Ltd.	Ratanagiri Refinery and Petrochemical Ltd.	Completed
10.	Assessment of the environmental performances of the seven industries utilizing the common channel of VECL for conveying their treated effluents and advice for improving their respective performances	Vadodara Enviro Channel Limited, GIDC Vadodara	On-going
11.	Assessment of the performance of the common hazardous waste management facility in MIDC, Taloja and advice for improving the safety and	Mumbai Waste management Ltd., MIDC, Taloja, Navi	On-going

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or On-going)
	environmental performance	Mumbai	
12.	Proof checking of 2 MLD sewage treatment plant with sewerage network for Wellington cantonment board	Gharpure Engineering and Constructions Pvt. Ltd.	On-going
13.	Assessment of pollution load in Ulhas river catchment and preparation of action plan for control of water pollution of river Ulhas, river Waldhuni and Ulhas creek	Mumbai Waste management Ltd., MIDC, Taloja, Navi Mumbai	Completed
14.	Expert advice on using treated wastewater from STP for selected construction activities	B.G. Shirke Construction Technology Pvt. Ltd.	New
15.	Vetting of scrubber design for air pollution control in a PNG based gas crematorium	Vichare & Co Pvt Ltd	New
16.	Vetting of basement filtration studies	I-Ven Realty Limited	New
17.	Assessment of contribution of suitable burning in Haryana and Punjab in air quality of Delhi-remote sensing component	CSIR-NEERI	On-going
18.	Particulate source apportionment study for air quality in Vasco da Gama, Goa	Goa SPCB	On-going
19.	Portable testing facility for cookstoves	CLEAN	Closed
20.	Work order for setting up of wind augmentation and air purifying unit on air pollution control system for traffic junctions and congested roads in Mumbai	MPCB	On-going

Patents:

Sr. No.	Title of the Patent	Inventors	Nation	Status	Date of patent granted
1.	Catalysts for the degradation of chlorinated organics	Swati Singh and Anurag Garg	National	Filed (Application No.: 201921053201)	20 th Dec, 2019
2.	Method and system for the remediation of contaminated earth from hazardous substances in a batch-wise ex-situ on-site manner. European Patent Application No. 11 805 621.7	Shyam. R. Asolekar	Europe	Intention for award of Patent for application no. 11 805 621.7 – 1014 was received from EPO	12 th Dec, 2019
3.	Method for real time forecasting of flood risk considering hazard, exposure and vulnerability.	Subimal Ghosh, Shrabani Tripathy, Subhankar Karmakar, IIT Bombay	National	Tentatively accepted TEMP/E-1/57873/2019-MUM	Aug., 2019
4.	Optic fiber sensor for detection of antibiotic or antibiotic-susceptibility of bacteria	Soumyo Mukherji, Pooja Nag, Kapil Sadani and Suparna Mukherji	National	Filed	6 th Aug. 2019
5.	Method for detection of antibiotic residues in samples	Soumyo Mukherji, Pooja Nag, Kapil Sadani, and Suparna Mukherji	National	Filed	31 st Jan 2019
6.	A method for concentration of viruses	Suparna Mukherji, Lakshmi Pisharody, and Sumathi Suresh	National	Filed	18 th Feb. 2020

Extension activities

Anil K. Dikshit

1. Chairman, Board of Examiners for R/s Mr. Birhanu Ermias Akalu, Earth Sciences Department, held on 25 July 2019.
2. Member of Interview Board at UPSC, Dholpur House, New Delhi, held during 19-21 August 2019.
3. External Ph.D Thesis Examiner R/s Mr. Mohammed Yaseen, Department of Civil Engineering, Bapuji Institute of Engineering & Technology, Davangere on 13 September 2019 (PhD Topic: Study of Non-Point Source Pollution for Selected Lakes of Davanagere).
4. Panelist on Panel Discussion on "Water Resource Management" organized by IIT Kharagpur Alumni Association Mumbai Chapter on 28 November 2019.
5. Placed a booth in the Tech & RnD Expo 2019 organized by IIT Bombay Displaying Working Models, Prototypes and Posters on Environmental Technology developed by EICT research group on 12-13 October, 2019.
6. Placed booth-J2: IIT Powai Displaying 'Working Models, Prototypes and Posters on Environmental Technologies' developed by EICT research group, IIT Bombay in IFAT-India 2019 Trade Fair on Water, Sewage & Solid Waste at Bombay Exhibition Centre, Goregaon, 16-18 October 2019.
7. "Daksha: Home Composter", which is major innovation in the term of a compact wet composting machine to be used at a single family or multi family unit within one's premises, was displayed in RnD Tech Exhibition at VMCC, IIT Bombay and in the IFAT Exhibition on Water, Sewage and Wastes at Bombay Exhibition Centre, Goregaon, Mumbai.

Visitors to the Department (Invited by the Faculty Members)

Amritanshu Shriwastava

1. Co-host for AUA scholar Co-hosted Dr. Nuruol Syuhadaa Mhd from University of Malaya, 1. Malaysia as an AUA Scholar from 01/12/2019 to 15/12/2019.

Anil K. Dikshit

1. Hosted a delegation comprising of (1) Prof. Paul Pettersson - Vice-Chancellor, (2) Dr. Helena Jerregård - Deputy Vice-Chancellor, (3) Dr. Thomas Wahl, Dean of the School of Business, Society and Engineering, and (4) Mr. Christer Nygren - Lecture at the School of Innovation, Design and Engineering from Malardalen University, Sweden on 30 January 2020.

Anurag Garg

1. Dr. Andrew B. Ross, Associate Professor in Energy and Resource Recovery, Department of Chemical Engineering, Leeds University, UK during 2-9 February 2020.
2. Dr. Louise Fletcher, Lecturer, School of Civil Engineering, Leeds University, UK during 2-9 February 2020.
3. Professor Ramin Farnood, Vice Dean – Research, Dept. of Chemical Engineering & Applied Chemistry, Faculty of Applied Science and Engineering, University of Totonto, Toronto, Canada on 10th December 2019 to ESED, IIT Bombay.
4. Professor Frederic Coulon, Professor of Environmental Chemistry & Microbiology, School of Water, Energy and Environment, Cranfield University, Cranfield, UK during 8-9th April 2019.
5. Dr. Vinod Kumar, Lecturer in Bioenergy/ Biomass Systems, Centre for Climate and Environmental Protection, Cranfield University, Cranfield, UK during 8-9th April 2019.

Subhankar Karmakar

1. Prof. Slobodan Simonovic, Director, ICLR, Department of Civil and Environmental Engineering, The University of Western University, London, Canada, delivered a talk on “A Systems Approach to Modelling the Water-Energy-Food Nexus” and attended a faculty interaction at ESED, IIT Bombay on 9 December 2019.

Virendra Sethi

1. Dr Paul Goodman, Newcastle University (CAD-TIME Project)
2. Dr. Lindsay Bramwell, Newcastle University (CAD-TIME Project)
3. Mr. Sohil Sisodiya , TEQIP Mentorship (June 2019)

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

National

Abhishek Chakraborty

1. Methods of monitoring particulate pollutants," 4th Indian International Conference on Air Quality Management IICAQM-2019," VMCC, IIT Bombay, 2019-12-17

Anil K. Dikshsit

1. Participated in Winter School on "Real-Time Urban Air Pollution and Personal Exposure Monitoring", 16-17 December 2019, IIT Bombay.
2. Presented invited talk on "Air Quality Modelling and Evaluation of Control Scenarios for an Urban Freeway," 4th Indian International Conference on Air Quality Management: Measurement, Modelling, Health Risk & Public Policy (IICAQM-2019) organized jointly by IIT Madras, IIT Bombay and University of North Texas, 18-20 December 2019, IIT Bombay.
3. Participated in the Workshop on "Indoor Air Quality & Health Effects" organized by IIT Madras, IIT Bombay and University of North Texas, 20 December 2019, IIT Bombay.

Anurag Garg

1. M. Malhotra, A. Garg. Hydrothermal Carbonization of Sewage Sludge: A Short Review. In 7th International Conference on Advances in Energy Research (ICAER 2019) organized by Department of Energy Science and Engineering (DESE), IIT Bombay during 10-12 December 2019.

Harish C. Phuleria

1. Phuleria H.C. "Role of molecular marker and other identifier species in factor identification", presented in NCAP-COALESCE project PMF workshop, IIT Bombay, Mumbai, MH, 22-24 Aug, 2019.
2. Phuleria H.C. "Collaborative opportunities with brick industry: Documenting current operational practices and baseline scenario", presented at National Brick Mission workshop, Pune, MH, 24-25th June, 2019.
3. Phuleria H.C. "NCAP: COALESCE project: Collaboration towards greener brick production", presented in the Red is Green workshop during iBaRT Expo, Gandhinagar, GJ, 28 Feb, 2019.
4. Anand A., Phuleria H.C. "Modelling indoor PM_{2.5} and BC in slum homes of Mumbai, India", oral presentation at National Environmental Conference 2019, IIT Bombay, Mumbai, MH, 31 Jan- 2 Feb, 2019.

5. Raparthi N., Phuleria H.C. “Estimating the average fleet emission factors for on-road vehicles by driving a car through the roadway tunnels”, oral presentation at National Environmental Conference 2019, IIT Bombay, Mumbai, MH, 31 Jan- 2 Feb, 2019.

Manoranjan Sahu

1. Sahu M., “4th International Conference on Air Quality Management”, Dec 18-20, IIT Bombay, 2019.
2. Sahu M., “Summer Course Lecture on Particulate Matter Measurements”: Winter School on Real Time Urban Air Pollution and Personal Exposure Monitoring, Dec 16-17, 2019.

Munish Kumar Chandel

1. Singh, A., and Chandel, M.C. “Landfill Mining Potential of Legacy Waste and its Associated Challenges”, Conference on Geoenvironment and Sustainability Geoenvironment-2020, IIT Delhi 17-19th February 2020.

Shyam R. Asolekar

1. Singh R., Rao B. and Asolekar S. R. “Fly Ash Based Geopolymers for Treatment of Hazardous Wastes”. Two-day National Conference on Use of Fly Ash in Agriculture, Forestry and Other Applications, Hyderabad, India, 17th and 18th December, 2019.
2. Singh R., Rao B. and Asolekar S. R. “Management of Legacy Wastes: Land Reclamation and Materials Recovery from Old Abandoned Dumpsites”. One-day National Workshop on Urban & Rural Challenges in Management of Solid Waste in India: A Circular Economy, Indian National Academy of Engineering Mumbai Chapter and IIT Bombay, India, 24th September, 2019.

Subhankar Karmakar

1. Gusain, A., Mohanty, M. and Karmakar, S. (2019) “Flood Hazard Characterization of Highly Flood-Prone Region under Changing Climate at Village Level”, National Environmental Conference 2019, Mumbai, India, 31 January – 2 February 2019.
2. Sudharsan, N., Singh, J., Ghosh, S. and Karmakar, S. (2019) “Are We Underestimating the Heat Stress over India Due to Heatwaves?”, National Environmental Conference 2019, Mumbai, India, 31 January – 2 February 2019.

Suparna Mukherji

1. Ghosh, P. and Mukherji, S. “Biodegradation of carbazole, fluorene and dibenzothiophene in presence of refinery wastewater”, 2nd ASCE India Conference on

“Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies” (CRSIDE2020), Kolkata, March 2-4, 2020.

2. Pisharody, L., Suresh, S., Mukherji, S. “Monitoring of Rotavirus A, Coliforms and MS2 Coliphage in Powai Lake: Seasonal Variation in Correlation between Rotavirus A and Indicator Organisms” National Conference on Issues and Challenges in Water Treatment and Allied Research for Sustainable Environment (WATER 2020), organized by Centre for Environment, IIT Guwahati, Guwahati, 23-25 January, 2020.
3. Bharti, S., Mukherji, S., Mukherji, S. “Impact of Various Factors on Synthesis of Silver Nanoparticles Using a Bacteria Capable of Simultaneous Nitrification and Denitrification” National Seminar on Current Perspectives in Environmental Pollution: Opportunities and Challenges, organized by Department of Environmental Science, Tezpur University, Napaam, Tezpur, Assam, India, 7th to 8th June, 2019.

Swatantra P. Singh

1. Singh, S.P. (2019) “Laser-induced graphene filters and membranes: Future in water and wastewater treatment”. National Environmental Conference (NEC) 31 January to 2 February 2019, IIT Bombay, Mumbai, Maharashtra, India.

Tabish Nawaz

1. Participated in “One-day workshop on urban & rural challenges in management of solid waste in India: a circular economy approach to building smart habitats” in collaboration with Indian National Academy of Engineering on 24th September, 2019 at IIT Bombay, Maharashtra, India.
2. Participated in “Round table on water crisis” organized by Indian Environmental Association and National Environmental Engineering Research Institute on 5th October 2019 at Hotel Sea Princess, Juhu Tara Road, Mumbai, Maharashtra, India.
3. Participated in “Two-day technical workshop on ozone precursors (VOCs and Carbonyls) monitoring” organized by Maharashtra Pollution Control Board on 18th – 19th November 2019 at Country Inn, Navi Mumbai, Maharashtra, India.

V.S. Vamsi Botlaguduru

1. Participated in “One-day workshop on urban & rural challenges in management of solid waste in India: a circular economy approach to building smart habitats” in collaboration with Indian National Academy of Engineering on 24th September, 2019 at IIT Bombay, Maharashtra, India.

Virendra Sethi

1. Das, D., Bhandarkar, U and Sethi, V., (2019) Processed Fuel for Domestic Cooking, 4th Indian International Conference on Air Quality Management, (IICAQM-2019)

“Measurement, Modelling, Health Risk and Public Policy” 18-20 December 2019, IIT Madras, Hosted by IIT Bombay, Maharashtra, India

International

Harish C. Phuleria

1. Yadav S., Vernekar P., Taveen S.K., Venkataraman C., Phuleria H.C. “Chemical Characterisation and Oxidative Potential of Aerosols Emitted from Solid Biomass Fuels Use in Rural India”. Poster presentation at American Geophysical Union (AGU) Fall Meeting, 9-13 Dec, 2019, San Francisco, California, USA.
2. Phuleria H.C. “Environmental exposure assessment in urban areas”. Presented in the IIT Bombay -Newcastle University joint workshop, 9 Dec, 2019, IIT Bombay, Mumbai, India.
3. Manwani P., Venkataraman C., Phuleria H.C. “Assessment of seasonal variability in black carbon and PM_{2.5} and role of meteorology at a regional background location in Northern India”. Oral presentation at International Conference on Sustainable Energy and Environmental Challenges (SEEC-2019), 27-29 Nov, 2019, CSIR-NEERI, Nagpur, India.
4. Sarkar C., Kapoor T., Venkataraman C., Chatterjee A., Phuleria H.C., Ghosh S. (2019) Estimating brown carbon absorption using multiple methods from long-term multi-wavelength aethalometer measurements over a Himalayan site. Poster presentation at European Geophysical Union (EGU), Vienna, Austria, 7–12 April 2019.
5. Participated in the “Energy Access to India” seminar, 21 Mar, 2019, MEMSI, Monash University, Melbourne, Australia.
6. Participated in collaborative discussions in Applied Environmental Science in various departments at Monash University as part of the IIT Bombay delegation, 18-22 Mar, 2019, Monash University, Melbourne, Australia.

Munish Kumar Chandel

1. Soni, A. R., and Chandel, M.C., “Impact of rainfall on travel time and fuel usage for Greater Mumbai city”, World Conference on Transport Research - WCTR 2019, Mumbai. 26-31 May 2019.
2. Sharma, I., and Chandel, M.C., “Impact of past rainfall events on the urban transport sector of the Mumbai Metropolitan Region: current and future projections under BAU scenario”, World Conference on Transport Research - WCTR 2019, Mumbai. 26-31 May 2019.
3. Pallath, D., Indurkar, M., and Chandel, M.C., “Assessment of Municipal Solid Waste Based Biogas Plants in India”. Oral presentation at ‘The 3R International Scientific

Conference on Material Cycles and Waste Management, Thailand, Bangkok February 26 to 2nd March, 2019.

4. Singh, A., and Chandel, M.C., “Characterisation of the fine fraction obtained from municipal solid waste dumpsite and its reclamation potential evaluation”. Oral presentation at ‘The 3R International Scientific Conference on Material Cycles and Waste Management, Thailand, Bangkok February 26 to 2nd March, 2019.
5. Negi, R., and Chandel, M.C., “Effect of non-revenue water reduction in the life cycle of water-energy nexus: A case study in India”, 7th International Conference on Advances in Energy Research 2019.
6. Sharma, B.K., and Chandel, M.C., “Achieving Consistency of Judgment Matrix in Analytical Hierarchy Process”, 9th International Conference on Sustainable Waste Management towards Circular Economy. November 27 - 30, 2019. Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, India.

Shyam R. Asolekar

1. Sutar, R. S., Lekshmi, B., Ranade, D. R., Parikh, Y. J., and Asolekar, S. R. “Towards Enhancement of Water Sovereignty by Implementing the ‘Constructed Wetland for Reuse’ Technology in Gated Community”. Second International Conference on Environmental Geotechnology, Recycled Waste Materials and Sustainable Engineering (EGRWSE 2019), University of Illinois, Chicago, USA, 16th and 20th June, 2019.
2. Lekshmi, B., Sutar, R. S., Parikh, Y. J., Ranade, D. R., and Asolekar, S. R. “Enhancement of Water Reuse by Treating Wastewater in Constructed Wetlands: Minimization of Nutrients and Fecal Coliform”. Second International Conference on Environmental Geotechnology, Recycled Waste Materials and Sustainable Engineering (EGRWSE 2019), University of Illinois, Chicago, USA, 16th and 20th June, 2019.
3. Singh R., Rao B. and Asolekar S. R. “Gainful Utilization of Legacy Waste Fractions Recovered from Mining of old Dumpsites in India – A Circular Economy Approach”. Ninth International Conference on Sustainable Wastes Management Towards Circular Economy (IconSWM – CE 2019, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, India, 27th and 30th November, 2019.
4. Singh R., Rao B. and Asolekar S. R. “Morphological Characterization and Structural Alteration of Acid Treated Asbestos-containing Wastes for Gainful Applications”. Ninth International Conference on Sustainable Wastes Management Towards Circular Economy (IconSWM – CE 2019, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, India, 27th and 30th November, 2019.

Subhankar Karmakar

1. Sherly, M. A., Janadri, K. K. and Karmakar, S. "Fuzzy cognitive mapping of flood risk perception and adaptive capacity of slum communities over the most flood-prone city in India", Proceedings of 4th IMA International Conference on Flood Risk, Swansea, UK, 12-13 September 2019
2. Ghosh, M., Sherly, M.A. and Karmakar, S. "Flood Risk Assessment under various Socio-Economic Scenarios", Hydro 2019 International Conference, Hyderabad, India, 18-20 December 2019
3. Sudharsan, N., Vittal, H. and Karmakar, S. "An Insight to Atmospheric Conditions during Extreme Climate Events over India", Hydro 2019 International Conference, Hyderabad, India, 18-20 December 2019
4. Ghosh, M., Shastri, H.K., Karmakar, S. and Ghosh, S. "An Improved Flood Forecasting Framework with a Quantile based Probabilistic Approach for a Coastal Urban Catchment", AGU Fall Meeting 2019, San Francisco, USA, 9-13 December 2019
5. Patel, P., Aliaga, D., Karmakar, S., Ghosh, S. and Niyogi., D. "Green Roofs to mitigate the urban extreme precipitation events? An experimental study over Mumbai, India." In AGU Fall Meeting 2019. AGU, 2019
6. Ghosh, M., Paul, S., Patel, P., Ghosh, S, Behera, M.R., Inamdar, AB. and Karmakar, S. "A near real-time flood forecasting system for an urban coastal catchment: A novel three-way hydrodynamic framework fed with numerical weather modelling outputs", 4th IMA International Conference on Flood Risk, Wales, UK, 12-13 September 2019
7. Ghosh, M., Singh, J., Karmakar, S. and Ghosh, S. "Nonstationary Frequency Analysis over a Flood Prone Indian Catchment", 11th World Congress on Water Resources and Environment, 49-50, Madrid, Spain, 25-29 June 2019
8. Mohanty, M.P., Karmakar, S. and Ghosh, S. "WEBFRIS: A web-based flood information system for enhanced resilience through risk awareness", 11th World Congress on Water Resources and Environment, 35-36, Madrid, Spain, 25-29 June 2019

Suparna Mukherji

1. Chand, P., Datta, S. Mukherji, S. "Biodegradation of Water-Soluble Fraction of Oily Sludge by *Bacillus cereus*: Preferential Degradation of Naphthalenes and Quinolines", 3rd International Conference on Waste Management, Recycle 2020, IIT Guwahati, Guwahati, 13th -14th February, 2020.

2. Garg, N., Mukherji, S. “Leaching of Metals from Steel Making Slag Using Mineral and Organic Acids” 3rd International Conference on Waste Management, Recycle 2020, IIT Guwahati, Guwahati, 13th -14th February, 2020.

Swatantra P. Singh

1. Misra, U., Barbhuiya, N. H., Singh, S.P. “New generation nanomaterials modified energy efficient membranes for desalination and wastewater reuse” International Conference on Sustainable Technologies for Desalination & National Water Mission and Annual Congress of InDA (InDACon 2020), 13 to 15 February, 2020 at Indus University, Ahmedabad, India.
2. Barbhuiya, N. H., Misra, U., Singh, S.P. “Electroconductive membranes for desalination, water and waste water treatment” International Conference on Sustainable Technologies for Desalination & National Water Mission and Annual Congress of InDA (InDACon 2020), 13 to 15 February, 2020 at Indus University, Ahmedabad, India.
3. Singh., S.P. “Laser-induced graphene based catalytic electrodes and membranes for desalination and wastewater treatment” SPARC Workshop (Indo-Australia) 4-5th November 2019, IIT Kharagpur, Kharagpur, West Bengal, India.
4. Singh., S.P. (2019) “Laser-induced graphene membrane filters and electrodes for desalination and wastewater treatment”. Fourth International Conference on Sustainable Energy & Environmental Challenges (IV SEEC) 27-29th November 2019. CSIR-National Environmental Engineering Research Institute, Nagpur, Maharashtra, India.
5. Participated in “One-day workshop on urban & rural challenges in management of solid waste in India: a circular economy approach to building smart habitats” in collaboration with Indian National Academy of Engineering on 24th September, 2019 at IIT Bombay.
6. Participated in “One-day workshop on “Water and Wastewater Management in Oil and Gas Sector” jointly organized by Centre of Excellence in Oil, Gas and Energy, IIT Bombay and Engineers India Limited (EIL), New Delhi on 11th January 2020.

Virendra Sethi

1. Rasma K, Menon, R., Gadhavi, H., and Sethi, V., (2019), Assessment of AOD Product from INSAT-3D Imager, (2019), A&WMA’s 112th Annual Conference & Exhibition, Quebec, Canada, JUNE 25-28, 2019, Platform.

2. Rasma K., Menon, R., Kumar, R., Gadhavi, H., and Sethi, V., (2019), Study of the Extent of Contribution of Regional Stubble Burning to the Air Pollution in Delhi-National Capital Region, A&WMA's 112th Annual Conference & Exhibition, Quebec, Canada, JUNE 25-28, 2019, Platform.

Conferences/Symposia/Workshops/Seminars (Coordinated/Chaired by Faculty)

Anil K. Dikshit

1. Chaired the Technical Session: "Solid Waste Management" in the National Environmental Conference (NEC-2019), 31 January-2 February 2019, IIT Bombay.
2. Chaired the Technical Session II: "Source Apportionment and Impact Assessment" in the 4th Indian International Conference on Air Quality Management (IICAQM-2019), 18 December 2019, IIT Bombay.

Anurag Garg

1. Coordinated a one-day workshop on "Water and Wastewater Management in Oil and Gas Sector" jointly organized by Centre of Excellence in Oil, Gas and Energy, IIT Bombay and Engineers India Limited (EIL), New Delhi on 11th January 2020. (Co-Coordinator: Prof. Santanu Bandyopadhyay, DESE, IIT Bombay).

Harish C. Phuleria

1. Co-coordinated National Environmental Conference 2019, IIT Bombay, Mumbai, 31 Jan- 2 Feb, 2019.

Munish Kumar Chandel

1. Special Session - "CLIMATRANS- Climate Change Mitigation and Adaptation Policies for Urban Transport Sector in India-Case Study of Mumbai Metropolitan Region," World Conference on Transport Research - WCTR 2019, Mumbai, India, 28 May 2019.
2. Session Chair- World Conference on Transport Research - WCTR 2019, Mumbai. 26-31 May 2019.
3. Session Chair- 7th International Conference on Advances in Energy Research 2019, IIT Bombay.

Shyam R. Asolekar

1. Organized "Two-day workshop on wastewater management" for Industry Professionals in collaboration with Department of Petrochemical Engineering, Dr.

Babasaheb Ambedkar Technological University on 17th and 18th January, 2020 at BATU, Lonere.

2. Organized “15th International Conference EnviroVision” in collaboration with Indian Environmental Association (IEA) on 9th and 11th January, 2020 in Mumbai.
3. Organized “One-day workshop on urban & rural challenges in management of solid waste in India: a circular economy approach to building smart habitats” in collaboration with Indian National Academy of Engineering on 24th September, 2019 at IIT Bombay.
4. Organized “The capacity building workshop focusing on pollution control and the role of government agencies: a circular economy approach” in collaboration with the Government of Rajasthan on 26th and 27th September, 2019 in Jaipur.

Subhankar Karmakar

1. Chaired a session on “Urban Flood” in The 1st International Conference on Urban Science and Engineering (ICUSE), 28 - 29 Feb 2020, Centre for Urban Science and Engineering, Indian Institute of Technology Bombay, Mumbai, India.

Suparna Mukherji

1. Session Chair in the 7th International Conference on Advances in Energy Research, organized by Department of Energy Science & Engineering, IIT Bombay, Mumbai, India, 10th - 12th December, 2019.

Virendra Sethi

1. Co-Convener, 4th Indian International Conference on Air Quality Management, (IICAQM-2019) “Measurement, Modelling, Health Risk and Public Policy” 18-20 December 2019, IIT Madras, Hosted by IIT Bombay, Maharashtra, India.
2. Co-organiser with MPCB, Ozone Precursors (VOCs & Carbonyls) Monitoring” Scheduled on 18 & 19 November 2019, Mahape, Navi Mumbai, Maharashtra, India.

Invited Lectures

National

Amritanshu Shriwastav

1. Algal Treatment Systems," Workshop for Practitioners on Wastewater Treatment and Recycling, 26th November 2019, IIT Bombay, Mumbai, Maharashtra, India.

2. Health Effects of Microplastics," Bilateral plastic workshop between NPI & NCPOR on "Plastic in the Ocean" 3rd December 2019, NCPOR Goa, Goa, India.

Anil K. Dikshit

1. Delivered talk on "Relevant Issues in the Solid Waste Management of Importance to Nashik Zila Parishad" in the Workshop on Solid Waste Management," organized by the Swachhsh Barat Abhiyan, Water & Sanitation Mission, Zila Parishad, Nashik, 19 January 2019, Sandip University Auditorium, Nashik.
2. Delivered talks on "Solid Waste Modelling-I" and "Solid Waste Modelling-II" in the TEQIP-III sponsored Short-Term Training Programme on "Environmental Systems Modelling & Design" organized on 3 July 2019 by Department of Civil Engineering, VNIT, Nagpur.
3. Delivered talk on "Role of Environmental Engineers in the Civil Society," Association of Civil Engineers, Babuji Institute of Engineering & Technology Davangere, 13 September 2019.
4. Delivered brief talk on "How Green is CNG as a Green Fuel" in the Alumni Meet 2019 organized by HBTI Alumni Association, 28 November 2019 at HBTI Kanpur.

Anurag Garg

1. A talk on "Opportunities for Resource Recovery from Municipal Solid Waste" in Department of Civil Engineering, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, West Bengal on February 11, 2020.
2. A talk on "Appraisal of Municipal Solid Waste Management Options using Energy and Mass Flow Modeling" in Workshop on Environmental Modelling Resolving Complexities for Predictable Tomorrow held at NEERI, Nagpur on August 7, 2019.
3. A talk on "Education Model for Skill Development & Entrepreneurship" in Workshop on National Symposium "SECO-2019" themed "Skill Development & Entrepreneurship: Challenges & Opportunities" at SCG Institute of Management and Law College, Kashipur, Uttaranchal on April 6, 2019.

Harish C. Phuleria

1. Phuleria. H.C. "Air pollution exposure assessment in (MUDHRA) cohort studies" at JSS-AHER, Mysuru, KA, 16 Dec, 2019.
2. Phuleria. H.C. "Air pollution: sources, exposures, health and climate effects" at Department of Environmental Science, Bangalore University, Bangalore, KA, 17 Dec, 2019.

Munish Kumar Chandel

1. Keynote Speaker at National Seminar cum Exhibition on “Waste to Wealth: Opportunities and Challenges”. 4-6th March 2020. Translational Research & Professional Leadership Centre [TPLC], Government Engineering College, Bartonhill, Thiruvananthapuram.

Shyam R. Asolekar

1. Presented talk entitled “The Climate Change-Related Opportunities for India: The Business Model Urban Climate Resilience” presented in the Programme Urban Climate Resilience: Aarey and Mumbai City held at Darryl D'Monte Memorial Training Camp - in collaboration with Mumbai Press Club, on 28th January, 2020.
2. Presented talk entitled “Local, Regional & Global Implications of Climate Change: How Do We Enhance Our Adaptability?” presented in the GACS Knowledge Conclave: Climate Resilience – Meeting a rising business imperative, organized by Global Association for Corporate Services (GACS), Mumbai Chapter on 24th January, 2020.

Subhankar Karmakar

1. Plenary talk in the 1st International Conference on Urban Science and Engineering (ICUSE), India on Urban Flood Forecasting and Risk Mapping: Present Status and Future Needs. 28 -29 Feb 2020 at Centre for Urban Science and Engineering, Indian Institute of Technology Bombay, Mumbai, Maharashtra, India.
2. Invited talk in AICTE funded Faculty Development Programme (FDP) on "Applications of GPS and Remote Sensing in Civil Engineering", on Risk Assessment and Mapping through Remote Sensing and GIS for Flood Management. 10th January 2020 at SPCE, Mumbai, Maharashtra, India.
3. Invited talk on Urban Flood Forecasting and Risk Management: Present Status and Future Needs at Department of Civil Engineering, Indian Institute of Technology Indore, 7 October 2019, Indore, India.
4. Invited talk on Flood Management in the Preparatory Meeting of DST-CNRS project on Monitoring and Modelling of the Mahanadi river basin in preparation of the SWOT, 17 September 2019, IIT Bombay, India.
5. Invited talk in the National Workshop on Urban Climate Network, on Understanding the urban climate processes of Mumbai city and generating extremes (floods and heat-waves) projections, risk-vulnerability maps held on 2-3 August 2019, Interdisciplinary Centre for Water Research (ICWaR), IISc Bangalore, India.
6. Invited talk in TEQIP III FDP on "Innovative Technologies for Sustainable Water Resources Management”, on The Need for Uncertainty Modeling and Risk Analysis

on Environmental and Hydro-climatic Systems. June 10, 2019 at VJTI, Mumbai, Maharashtra, India.

7. Invited talk in the National conference on Flood Early Warning for Disaster Risk Reduction, 30-31 May 2019, National Remote Sensing Centre (NRSC), Hyderabad, India on Real-time Integrated Flood Forecasting for Chennai. Hyderabad, India.

Suparna Mukherji

1. Mukherji, S. “Greywater Treatment for Promoting Water Recycling and Reuse” presented at “Water, Water Purification and Sustainability Workshop (WWPS)” organized by Integrative Taxonomy and Microbial Ecology Research Group & Centre for Climate and Environmental Studies, Indian Institute of Science Education and Research Kolkata (IISER, Kolkata), Hotel IBIS, Rajarhat, New Town, Kolkata, 19th November, 2019.

Swatantra P. Singh

1. Singh., S.P. “Laser-induced graphene filters and membranes: Future in water and wastewater treatment”. National Environmental Conference (NEC) 31 January to 2 February 2019, IIT Bombay, Mumbai Maharashtra, India.
2. Singh., S.P. “Laser-induced graphene based catalytic electrodes and membranes for desalination and wastewater treatment” SPARC Workshop (Indo-Australia) 4-5th November 2019, IIT Kharagpur, Kharagpur, West Bengal, India.
3. Singh., S.P. “Laser-induced graphene membrane filters and electrodes for desalination and wastewater treatment”. Fourth International Conference on Sustainable Energy & Environmental Challenges (IV SEEC) 27-29th November 2019. CSIR-National Environmental Engineering Research Institute, Nagpur, Maharashtra, India.

International

Anurag Garg

1. A lecture on "Case Studies: Refuse Derived Fuel (RDF) Production and Its Utilisation Options in India," in a *Summer School organized at* Technical University, Vienna, Austria on September 17, 2019.
2. A talk on “Introduction to the British Council/DST food waste project”, in a workshop on “Plant power: bioenergy as a renewable resource” at Royal Botanic Gardens Kew, London, UK, June 27, 2019.
3. A presentation on “Ongoing Research Activities” in Postgraduate Research Conference at Leeds University, Leeds, UK, June 25, 2019.

Suparna Mukherji

1. Mukherji, S. “Nanoparticles and Nanocomposites for Water & Wastewater Treatment Applications” Talk presented at School of Energy and Environment, City University, Hong Kong, 29th August 2019.

CEP Organized

Anurag Garg

8. Resource Recovery Opportunities from Biodegradable Fraction of Municipal Solid Waste during 6-7 February 2020 at IIT Bombay, Mumbai, Maharashtra, India.

Harish C. Phuleria

1. Organized 2-day CEP course on “Environmental Sustainability” at Shivaji University, Kolhapur, MH, 19-20 Oct, 2019.
2. Organized 5-day CEP course on "Environmental Health & Safety" at IIT Bombay, Mumbai, MH, 11-15 Sep, 2019.

Munish Kumar Chandel

1. Two-days CEP course on Environmental Sustainability’ Shivaji University, Kolhapur in Oct 2019 (Co-convener).

Honorary Work

Amritanshu Shrivastav

1. Expert member in the Working Group under Scientific Panel on Contaminants in Food Chain for Microplastics, constituted by Food Safety and Standards Authority of India.
2. Mentor for India Innovation Growth Programme 2.0 University Challenge Teams (IIGP 2.0 - 2019), Department of Science and Technology.

Dikshit, A.K.

1. Delivered Awareness Talk on "Lake Cleanup" during Powai Lake Cleanup & Awareness Campaign organized by SAGE in association with Abhyuday, IIT Bombay and MCGM on 3 November 2019.

Anurag Garg

1. Served as external examiner for 10 Ph.D. theses and 1 M.Tech. dissertation submitted in IITs, NITs and other Institutions.
2. Served as internal examiner/ chairperson for 4 candidates defending their Ph.D. thesis at IIT Bombay.
3. Served as expert member on faculty selection committee in SVNIT Surat.
4. Served twice as an expert on PMRF selection committee for Environmental Engineering the interviews for which were held in IIT Roorkee.
5. Serving/served as expert member on several committees formed by MCGM, MPCB, NEERI Nagpur, BIRAC-SPARSH, DBT.
6. Reviewed papers submitted to various journals such as Waste Management, Chemical Engineering Journal, Industrial & Engineering Chemistry Research, Journal of Water Process Engineering, Journal of Institution of Engineers (India): Series A, Applied Nanoscience, Journal of Environmental Management.

Manoranjan Sahu.

1. Advisory Committee Member: National Conference on Recent Advances in Energy, Environment and Health Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar-751030, Odisha.

Munish Kumar Chandel

1. Member, Board of Studies (BoS), School of Civil Engineering (SoCE), Shri mata Vaishno Devi University (SMVDU) Katra.
2. Jury Member, Smart City- Empowering India Awards 2019, National Institute of Urban Affairs (NIUA) under Ministry of Housing and Urban Affairs, GoI.
3. External Ph.D. Thesis Examined: 3
4. Member of Expert Committee for Municipal Solid Waste (MSW) Processing Facility at Calangute / Saligao in North Goa & Cacora in South Goa.
5. Technical advisory committee Setting-Up Facility for Processing/Treating/Disposal of Municipal Solid Waste with State of Art Waste to Energy Plant for Pimpri Chinchwad Municipal Corporation.
6. Nodal Officer, Special Directorate of Chemical & Waste Management at CSIR-NEERI, Nagpur.

Shyam R. Asolekar

1. Currently serving as the M.P.C.B. Chair Professor at the Environmental Science and Engineering Department at Indian Institute of Technology Bombay.
2. Member of “Dahanu Taluka Environmental Protection Authority” constituted by the Honorable Supreme Court of India and entrusted with the conservation and sustainable development of the eco-fragile region of Dahanu Taluka in Palghar District, State of Maharashtra.

Subhankar Karmakar

1. Associate Editor, Frontiers in Water and Built Environment Journal (from 2019 till date).
2. External Ph.D. Thesis Examiner NIT Rourkela, Student of Prof. K C Patra, Dept of Civil Engg. (2019).
3. External Ph.D. Thesis Examiner Jadavpur University, Student of Prof. Amit Dutta, Dept of Civil Engg. (2020).

Suparna Mukherji

1. Member of Editorial Board, Applied Nanoscience, Springer, since 2011.
2. Associate Editor, Journal of The Institution of Engineers (India): Series A; since April 2017.
3. Member of CSIR Thematic Committee on “Ecology, Environment, Earth Sciences, Ocean and Water (E3OW)” for review of Niche Creating Projects (NCPs)/Focus Basic Research (FBR) projects, October, 2019- present.
4. Expert Member of BIRAC Area Review Panel on "Environment, Energy and Secondary agriculture" for review of projects in this area, July 2019-present.
5. Member of Faculty Selection Committee, Department of Civil Engineering, IIT Madras, March, 2020.
6. Member of Committee for “Reviewing issues related to recruitment, promotion, additional requirements of scientific posts and review of Ministry of Environment, Forest and Climate Change Recruitment Rules, 2015” October 2018 - August, 2019.
7. Member of Committee set up in accordance with directions/orders passed by Hon’ble National Green Tribunal (NGT) Principal Bench New Delhi on 20/2/19 in the M.A. No. 396 of 2017 in Original Application No. 7 of 2014 (THC) (WZ) (Janardhan Kundalikrao Pharande & others Vs. MOEFCC & Others); March 2019 to June, 2019.

8. Member of IDPC, Centre for Research in Nanotechnology and Science (CRNTS), since Feb 2018-present.
9. Member of Institute Biosafety Committee, August, 2018- present.
10. Member of Institute Ethics Committee, Feb, 2017- July, 2019.
11. External Reviewer for Ph.D. Thesis: “Treatment of Synthetic Pharmaceutical Wastewater Containing Ciprofloxacin and Gabapentin Drugs by Modified Advanced Oxidation Processes (AOPs)” by Sourav Kumar Mondal, Guided by Prof. Alok Sinha, Department of Environmental Science & Engineering, IIT Dhanbad, Dhanbad, October, 2019.
12. External Reviewer for Ph.D. Thesis: “Acidogenic-Biorefinery for Renewable Energy and Platform Chemicals: Upscaling and Sustainability Analysis” by Mr. Omprakash Sarkar, Guided by Dr. S. Venkata Mohan, Academy of Scientific and Innovative Research (AcSIR), CSIR- Indian Institute of Chemical Technology, Tarnaka, Hyderabad, September, 2019.
13. External Reviewer for Ph.D. Thesis: “Environmental Toxins Responsible for the Development of Chronic Kidney Disease of Unknown Etiology (CKDu) in Canacona Taluka, Goa” by Starlaine Chrizelle Mascarenhas, Guided by Prof. Anasuya Ganguly, Department of Biological Sciences, Birla Institute of Technology and Science Pilani (BITS Pilani, Goa Campus), August, 2019.
14. External Reviewer for Ph.D. Thesis: “Studies on Electrochemical Degradation of Reactive Black-5 Dye and Urea Solutions Using Indigenously Developed and Commercial Electrodes” by Priya Saxena, Guided by Prof. Jayesh P. Ruparelia, Department of Chemical Engineering, Nirma University, Ahmedabad, Gujarat, India, August, 2019.
15. External Reviewer for Ph.D. Thesis: “Bioremediation of Mixed Dyes & Heavy Metals from Textile Wastewater” by Saurabh Mishra, Guided by Prof. A. Maiti, Department of Polymer & Process Engineering, IIT Roorkee, Roorkee, Uttarakhand, India, July, 2019.
16. External Reviewer for Ph.D. Thesis: “Assessment of Groundwater Quality Around the Municipal Solid Waste Dumping Sites” by Sachin Mishra, Guided by Prof. D. Tiwary, Department of Chemistry and Prof. A. Ohri, Dept. of Civil Engg., IIT BHU, Varanasi, India, July, 2019.

Swatantra P. Singh

1. Served as internal examiner/chairperson for 8 candidates defending their M.Tech and MSc. these/seminars at IIT Bombay.

2. Reviewed papers submitted to various journals such as Desalination, Science of Total Environment, Journal of Hazardous Materials, Applied Nanoscience, PLOS One etc.

Tabish Nawaz

1. Served as a member of PhD dissertation committee of PhD candidate, Ashiqur Rahman, Department of Chemical Engineering, Lamar University, Texas, USA.
2. Reviewed a research article in the journal Environmental Science and Pollution Research, Springer.

Virendra Sethi

1. Coordinated to established the IITB-WUStL Joint Aerosol Research Facility (December 2019).
2. Member: Cluster Steering Committees for IoE World Class Labs, IIT Bombay.
3. Member: Steering Committee for the Project on “Review of Ambient Air Quality Criteria/Standards, CPCB, Delhi.
4. Reviewer for Journal Papers.
5. External Examiner for PhD Theses.

Faculty Members and Their Specializations

1. Anil Kumar Dikshit

Professor

Environment and Water Technologies; Municipal, Biomedical and Industrial Wastes Management; Environmental Impact Assessment, Systems Modelling and Sustainability; GIS Application for Environmental Planning and Management.

2. Shyam R. Asolekar

Professor

Development and modelling of reactors for treatment of domestic sewage and industrial wastewaters for pollution control and reuse, Hazardous, solid, and biomedical wastes management including decontamination of soils and sediments (field assessments, reactor development and modelling), Preventive environmental management and sustainable development incorporating waste minimization, cleaner and greener technologies, Application of remotely sensed data for monitoring and modelling of environmental systems; Environmental planning, policy and law.

3. Virendra Sethi

Professor

Air Pollution Science and Engineering, Aerosol Transport Measurements, Aerosol Characterisation. Satellite Data Assisted Air Quality Management, Biomass Gasification Hot Gas Cleanup, Engineering Education.

4. Sanjeev Chaudhari

Professor

Water and Wastewater Treatment.

5. Suparna Mukherji

Professor & Head

Biodegradation and Bioremediation of Complex Organic Pollutants, Toxicity Evaluation of Complex Mixtures, Environmental Application of Nanomaterials, Sorption Phenomena, Sampling and Analysis of Bioaerosols.

6. Subhankar Karmakar

Professor

Environmental and Water Resources Systems Engineering, Uncertainty Modeling, Disaster Risk and Vulnerability Assessment.

7. Anurag Garg

Professor

Municipal solid waste treatment by composting; energy from waste; hydrothermal treatment of sludge and municipal solid waste; Industrial wastewater treatment by catalytic wet oxidation and advanced wastewater treatment methods.

8. Munish Kumar Chandel

Associate Professor

Carbon Capture and Storage, Chemical Looping Combustion, Fluidized bed combustion, Greenhouse Gas Mitigation, Solid Waste Management, Waste to Energy, Water-Energy Nexus.

9. Harish C. Phuleria

Assistant Professor

Aerosols & Air Quality Characterization, Environmental Noise Exposures, Environmental Health.

10. Amritanshu Shriwastav

Assistant Professor

Ecology of microorganisms, Water and wastewater treatment, Algal bio-refinery for biofuel production, Algal-bacterial photo-bioreactors, Remediation of heavy metal contamination.

11. Swatantra Pratap Singh

Assistant Professor

Desalination and wastewater treatment by membranes; biofouling control by nanomaterials, Analytical environmental chemistry, Fate & transport of organic and

emerging contaminants in the environment, Environmental quantum chemical modeling, Physico-chemical & biological treatment processes.

12. Manoranjan Sahu

Assistant Professor

Aerosol and air pollution research (Indoor/Outdoor Aerosol Monitoring, Characterization and Modeling, Aerosol technology and advanced applications), Nanotechnology & Application to Environment and energy: Nanomaterials synthesis, advanced characterization and application to solve various societal problems (waste water treatment, air contaminant and other areas of application), Climate Change: CO₂ capture, GHG emission and nanomaterials application for CO₂ reduction to useful products, Chemical Process Research and Development: Process research and development, scale-up and technology transfer from lab scale to pilot scale to commercialization (solar energy, silicon materials, specialty polymers).

13. Abhishek Chakraborty

Assistant Professor

Real-time air pollution monitoring, Physicochemical characterization of aerosols, Atmospheric processing of organic aerosols, Source apportionment, Air pollution control and general environmental engineering related issues.

14. Venkata Sai Vamsi

Assistant Professor

UV-based Advanced Redox Processes for water/wastewater treatment, Removal of emerging contaminants from water/wastewater, Air Quality Trends Analysis.

15. Tabish Nawaz

Assistant Professor

Wastewater treatment, resource recovery, ion-exchange and adsorption systems, electrochemical systems, mathematical modeling, nanoparticles, PFAS, mercury and heavy metals in coal power plant emission.

Publications

Books

None

Books (Edited)

Swatantra P. Singh

1. Gupta T., Singh S.P., Rajput P., Agarwal A. K., (2020) Measurement, Analysis and Remediation of Environmental Pollutants. Springer, Singapore.

Chapters in Books

Abhishek Chakraborty

1. Chakraborty, A., "Organic Air Pollutants: Measurement, Properties & Control" Measurement, Analysis and Remediation of Environmental Pollutants, Ed. Tarun Gupta, Swatantra Pratap Singh, Prashant Rajput, Avinash Kumar Agarwal, Singapore, Springer, 2019, pp.107-130.

Amrtianshu Shriwastav

1. Krishnan S., Karim A.V., Singh S.P., Shriwastav A. Measurement, Analysis, and Remediation of Bisphenol-A from Environmental Matrices. In: Gupta T., Singh S., Rajput P., Agarwal A. (eds) Measurement, Analysis and Remediation of Environmental Pollutants. Energy, Environment, and Sustainability. Springer, Singapore, 2020.
2. Ashok V., Gupta S.K., Shriwastav A. Photobioreactors for Wastewater Treatment. In: Gupta S., Bux F. (eds) Application of Microalgae in Wastewater Treatment. Springer, Cham., 2019.

Anil K. Dikshit

1. Shinde, A.M., Dikshit, A.K., Singh, R.K. Life Cycle Assessment of Public Transport Modes in Mumbai Metropolitan Region, Chap.in: Handbook of Environmental Materials Management, Ed. Mustansar Hussain Chaudhery, Springer Nature, Switzerland, 2019.

Anurag Garg

1. Gupta, D., Mahajani, S. M. & Garg, A. "Opportunities for Resource Recovery after Hydrothermal Pretreatment of Biodegradable Municipal Solid Waste: A Mini-Review". Published in the book 'Waste Management as Economic Industry Towards Circular Economy', 149-158, Springer, Nature, March 2020.
2. Modi, S., Mahajani, S. M., Honkalaskar, V. & Garg, A. "Co-composting of Cattle Dung and Pigeon Pea Stalk in Large Scale Pit System using Passive Aeration". Published in the book 'Bio-resource Utilization and Bioprocess', 243-252, Springer, Nature, March 2020.

Harish C. Phuleria

1. Yadav S., Phuleria H.C., "Oxidative potential of Particulate Matter: A prospective measure to assess PM toxicity" in Gupta T., Singh S.P., Rajput P., Agarwal A.K., (eds) Measurement, Analysis and Remediation of Environmental Pollutants, 333-356, Springer, Singapore, 2019.

Sanjeev Kumar Chaudhari

1. Khare, A, Singh, S, Chaudhari, S., “Development of Synthetic Hydroxyapatite-Based Household Defluoridation Unit”, *Advances in Water Purification Techniques*, 271-290, 2019.

Shyam R. Asolekar

1. Lekshmi, B., Sharma, S., Sutar, R. S., Parikh, Y. J., Ranade, D. R., and Asolekar, S. R. “Circular economy approach to women empowerment through reusing treated rural wastewater using constructed wetlands” in *waste management as economic industry towards circular economy*, 01, pp. 1-10. Edited by S. Ghosh, Springer, Singapore, March, 2020.
2. Sharma, S., Lekshmi, B., Sutar, R. S., Parikh, Y., Ranade, D. R., and Asolekar, S. R. “Reuse of washing machine effluent using constructed wetland: the circular economy of sanitation” in *recent trends in waste water treatment and water resource management*, 09, pp. 85-100. Edited by S. Ghosh, P. Saha & M. Francesco Di, Springer, Singapore, February, 2020.
3. Sutar, R. S., Kumar, D., Kamble, K. A., Kumar, D., Parikh, Y., and Asolekar, S. R. “Significance of constructed wetlands for enhancing reuse of treated sewages in rural India” in *waste management and resource efficiency*, 101, pp. 1221-1229. Edited by S. Ghosh, Springer, Singapore, 2019.
4. Sutar, R. S., Motghare, V. M., Kollur, S. C., Parikh, Y., and Asolekar S.R. “Significance of addressing persistence of pathogens and micropollutants to enhance reuse of treated sewages using constructed wetlands” in *advances in waste management*, 25, pp. 355-367. Edited by A. Kalamdhad, J. Singh, K. Dhamodharan, Springer, Singapore, 2019.
5. Vivek, J. M., Singh, R., Sutar, R. S., and Asolekar, S. R. “Characterization and disposal of ashes from biomedical waste incinerator” in *advances in waste management*, 30, pp. 421-435. Edited by A. Kalamdhad, J. Singh, K. Dhamodharan, Springer, Singapore, 2019.
6. Singh, R., Vivek, J.M., Rao, B. and Asolekar, S.R. “Significance of the presence of asbestos in construction and demolition wastes in India” in *advances in waste management*, 30, pp. 303-317. Edited by A. Kalamdhad, J. Singh, K. Dhamodharan, Springer, Singapore, 2019
7. Vivek, J.M., Singh, R. and Asolekar, S.R. “Hazardous Waste Generation and Management in Ship Recycling Yards in India: A Case Study” in *waste management*

and resource efficiency, pp. 1051-1065. Edited by S.K Ghosh. Springer, Singapore, 2019.

8. Singh, R., Sontakke, M., Vivek, J.M., Rao, B. and Asolekar, S.R. "Environmental sound management of asbestos-containing wastes generated from industries in India" in waste management and resource efficiency, pp. 597-611. Edited by S.K Ghosh. Springer, Singapore, 2019.

Suparna Mukherji

1. Mohapatra, S., N.G. Menon, L.P. Padhye, S.S.V. Tatiparti and S. Mukherji, "Natural Attenuation of Pharmaceuticals in the Aquatic Environment and Role of Phototransformation" In "Contaminants in Drinking and Wastewater Sources: Challenges and Reigning Technologies", Editors: Kumar, M., Snow, D.D., Honda, R., Mukherjee, S., Springer Transactions in Civil and Environmental Engineering, Springer Nature Singapore Pte Ltd., 2020. *Accepted*.
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