SAHIL BHANDARI

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Department of Chemical Engineering, UT Austin **(737)-444-0542**

ACADEMIC PROFILE

Year/Degree	Institution	Performance (CPI/%)
2020(Expected)/Doctorate in Chemical Engineering	University of Texas at Austin	3.93/4.00
2015 Dual Degree in Chemical Engineering	Indian Institute of Technology(IIT) Kanpur	9.7/10.0 M.Tech. 9.3/10.0 B.Tech.

SCHOLASTIC ACHIEVEMENTS

- **Recipient, Green Fee Fellowship, UT Austin,** Effect of air pollutants' exposure in UT Shuttles on Student Health
- **Recipient**, Dr. Thomas F. Edgar Endowed Graduate Fellowship in Chemical Engineering at **UT Austin**
- Awarded merit scholarship for **Masters' 2014-15** by **Ministry of Human Resource & Development, Govt. of India**
- Presented **Academic Excellence Award** (2010, 2011, 2013) at **IIT Kanpur** for distinctive academic achievements
- Selected for the **Indian Academy of Sciences** (IAS) Summer Research Fellowship Program-2012
- Received undergraduate scholarship(**2010-14), Govt. of India Merit Scholarship Scheme for Professional Studies**
- Amongst the **top 0.5%** in India's IIT-**Joint Entrance Examination (IITJEE) 2010** amongst 470,000 candidates
- Attained **All India Rank 272** in All India Engineering Entrance Exam (**AIEEE) 2010** amongst about 1 million students

ACTIVITIES & ORGANIZATIONS

- Member, UT Contingent, Assn. for the Advancement of Sustainability in Higher Education (AASHE) Conference 2017
- Student Mentor, Women in Engineering Program (Spring 2016, Spring 2017-)
- Research Volunteer, Government of the National Capital Territory of Delhi-India (Sept 2016-Mar 2017)
- Completed UT's International Teaching Assistant-Undergraduate Teaching Ambassador Connect Program (Fall 2017)
- Certified Teaching Assistant, *Numerical Methods and Problem Solving in Chemical Engineering* (Fall 2016)
- Dept. Rep., UT Austin Graduate Student Assembly and Graduate Engineering Council (Aug 2015-July 2016)
- Member, American Association for Aerosol Research (AAAR) (2016-)
- Member, American Geophysical Union (AGU) (2017-)

SKILLS IN PRACTICE

- Experimental- Particle phase instruments: ACSM, SMPS Gas phase instruments: CIMS, NO_x, NO_2, O_3 monitors
- Modeling Tools- IGOR, MATLAB, ArcGIS, QGIS, ERDAS Imagine, FORTRAN
- Grant Writing- Awarded the 2017 UT Green Fee Award for studying health effects of public transport use by students

KEY ACADEMIC PROJECTS

Effect of air pollutants' exposure in UT Shuttles on Student Health **(June 2017-)**

Mentor(s): Lea Hildebrandt Ruiz, McKetta Department of Chemical Engineering, UT Austin

- Secured grant to undertake a comprehensive evaluation of pollutant levels in a public transit service in Central Texas
- Involves both particle phase and gas phase (CO, CO_2) pollutant exposure monitoring
- Data processed for temperature and humidity corrections will be uploaded on GIS Maps using ArcGIS/QGIS services
- Future plans involve addition of other low-cost gas phase monitors (NO_2) and noise pollution mapping

Source Apportionment of Atmospheric Pollution in the National Capital Territory of Delhi, India **(Nov 2016-)**

Mentor(s): Lea Hildebrandt Ruiz, McKetta Department of Chemical Engineering, UT Austin and Joshua Apte, Department of Civil, Architectural and Environmental Engineering, UT Austin

- Set up Aerosol Chemical Speciation Monitor (**ACSM**) for unit mass-time resolution in a one month stint at IIT Delhi
- Processed raw datasets and applied field calibration-based corrections mandatory for data interpretation in **IGOR**
- Currently conducting **positive matrix factorization (PMF)** to identify pollution contributing local and regional sources
- First High-Resolution Mass Spectrometer based study for Delhi

Source Apportionment and Inverse Modeling applied to Atmospheric Methane Concentrations Before and after the Hydraulic Fracturing Boom in the United States using Satellite Data (Sept 2016-Mar 2017)
Mentor: David Allen, McKetta Department of Chemical Engineering, UT Austin and Thoralf Meyer, Dept. of Geography and the Environment, UT Austin

- Secured access to **atmospheric methane mole fractions** retrieved from **SCIAMACHY** instrument aboard ENVISAT
- Processed obtained **NetCDF files in MATLAB** and applied terrain correction to obtain corrected methane data

Identification of High Traffic and High Population Density Locations in Austin using ArcGIS and Predicting the Spread of Zika Virus based on the SIR Infectious Disease Model (Jan-Mar 2016)
Mentor: Prof. Miguel Pavon, Administrator, Borderlands Information Center (BIC), Texas Natural Resources Information System (TNRIS) and Dr. Lea Hildebrandt Ruiz, McKetta Department of Chemical Engineering, UT Austin

- Initiated use of Geographic Information Systems (GIS) tools in lab based on UT Course on software ArcGIS
- Acquired and processed GIS data stacking roads, Austin traffic data (TxDOT) and population demographics data
- Applied **ArcGIS** highlighting geographic locations of significance for **mobile pollution monitoring** in **Austin**
- Procured open-source global flight passenger data and applied the Susceptible-Infectious-Recovered model in **ArcGIS** with a starting 100 infected individuals in **Brazil;** predicted rapid increase in infections in developing countries

PUBLICATIONS & PRESENTATIONS

- [Manuscript in preparation] Dhulipala, Surya, **Bhandari, Sahil**, Hildebrandt Ruiz, Lea, Secondary Organic Aerosol Formation from Chlorine Initiated Oxidation of Toluene
- **Bhandari Sahil**, Wang S. Dongyu, Gani Shahzad, Saraj Sarah, Arub Zainab, Habib Gazala, Apte Joshua S., Hildebrandt Ruiz Lea. Source Apportionment of High Temporal Resolution PM_1 Data for Delhi, India. **Poster** presentation-**2017** Annual AAAR Conference, Raleigh, NC.
- Wang S. Dongyu, **Bhandari Sahil**, Cardoso Felipe, Hildebrandt Ruiz Lea. Gas-particle partitioning of alkyl nitrate from anthropogenic volatile organic compounds. **Oral** Presentation-**2017** AICHE Conference, Minneapolis, MN.
- Gani Shahzad, **Bhandari Sahil**, Saraj Sarah, Arub Zainab, Habib Gazala, Hildebrandt Ruiz Lea, Apte Joshua S., Particle Size Distribution in New Delhi: Role of Coagulation and Nucleation. **Poster** presentation-**2017** Annual AAAR Conference, Raleigh, NC.
- Bean Jeffrey, Wang S. Dongyu, **Bhandari Sahil**, Hildebrandt Ruiz Lea. Atmospheric Impacts of Hydraulic Fracturing: Aerosol Production from Flowback Fluid. **Poster** presentation-**2016** Annual AAAR Conference, Portland, OR, US.
- Wang Dongyu, Bui Alexander, **Bhandari Sahil**, Bean Jeffrey, Dhulipala Surya, Wallace Henry, Griffin Robert, Hildebrandt Ruiz Lea. Volatility and particle-phase hydrolysis of alkyl nitrates from anthropogenic alkanes and alkenes. **Oral** Presentation- **2016** Annual AAAR Conference, Portland, Oregon (OR), US.
- **Bhandari Sahil**, Joshi Y.M. Relaxation and retardation spectra of time dependent materials in effective time domain. **Oral** and **poster** presentation**-**8th National Symposium on Complex Fluids (**2014)**, JNCASR, Bangalore, India.
- **Bhandari Sahil**, Jain Shobhit. Development and Implementation of low cost drinking water filtration projects. Winner, **Oral presentation competition-** Aavishkar, UICET, Panjab University-**2013.**

INDUSTRIAL INTERNSHIP EXPERIENCE

ITC Limited: Developing a systematic approach to Drinking Water Filtration Projects (May-July 2013)

- Evaluated low cost water filtration units –both at the household and community level – and framed a rural dissemination model with the ultimate objective as provision of safe drinking water to villagers at an affordable price
- Prepared a Social Opportunity And Business Value Assessment Tool (SOBVA) for identification of appropriate villages for project implementation and evaluated the social necessity and the business importance of a pilot village
- Devised WHO based sampling scheme for a village water mapping survey and conducted field visits to the pilot plant village to understand the situation better
- Created interface (C program-based) to shortlist filtration plant technology based on 50 parameters as cost, availability, relevant physical and chemical parameters evaluated on a scale of 1-6 for 60 different technologies.
- Developed and used a funnel approach to shortlist filtration system vendors and evaluated available dissemination models and finalized the Hybrid blending Income Model with earned and contributed income sources.
- Designed a package of approach for drinking water filtration project implementation in any village and implemented a pilot project in one village- Gudapalle, Andhra Pradesh, India
- Awarded **Pre-Placement Offer** in the company for excellence in the internship
- Won Innovation and Social Entrepreneur Award, Vivekananda Youth Leadership Convention-2014, India for this work.