Curriculum Vitae

Venkata Sai Vamsi Botlaguduru, Ph.D.

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SUMMARY

Doctorate in civil engineering with research expertise in water/wastewater treatment, air quality trend analysis, and environmental life cycle assessment. Academic interests focus on environmental engineering and sustainability.

EDUCATION & REGISTRATION

- **Ph.D.,** Civil Engineering, Texas A&M University, College Station, TX *(May, 2016)*
  Dissertation: UV-Sulfite based Advanced Reduction Treatment of Disinfection Byproducts and Perfluorooctane
- **M.S.,** Biological & Agricultural Engineering, Texas A&M University, College Station, TX *(Dec, 2009)*
- *Thesis: Comparison of AERMOD and ISCST3 models for Particulate Emissions from Ground Level Sources*
- **B.Tech.,** Civil Engineering, Acharya Nagarjuna University, India, *(May, 2007)*
- **Engineer-in-Training,** #50345, Texas Board of Professional Engineers *(2014)*
  - *Passed P.E. Environmental exam in October 2018*

WORK EXPERIENCE

POST-DOCTORAL RESEARCHER (12/2016 – Present)
NSF CREST Center for Energy & Environmental Sustainability, Prairie View A&M University, Prairie View, TX

- Formulated a stochastic model to isolate the influence of meteorological variability on air quality time-series data.
- Analyzed long-term ozone trends in the Greater Houston Area, and evaluated the impact of emission control programs in lowering NOx and VOC levels.
- Developed two successful grant proposals to advance research in renewable energy and environmental sustainability.
- Provided daily guidance and supervision to five graduate, and three undergraduate students in Engineering, and mentored them toward the completion of their thesis/projects.

ENVIRONMENTAL ENGINEER I (08/2016 – 11/2016)
Air Permitting Division, Nebraska Dept. of Environmental Quality, Lincoln, NE

- Reviewed air quality permit applications and determined compliance with applicable federal Clean Air Act regulations for industrial clients, Yahoo! Inc. and Nebraska Corn Processing, LLC.
- Performed engineering calculations in support of air quality permit applications for emergency engines, ethanol plants and feed mills.
- Conducted air dispersion modeling to assess the impact of emissions from a proposed mining facility on $PM_{2.5}$ attainment status in Nebraska.

GRADUATE RESEARCH ASSISTANT (01/2010 – 01/2016)
Texas Engineering Experiment Station, Texas A&M University, College Station, TX

- Designed and built a bench-scale UV reactor system for water/wastewater treatment experiments.
- Developed ion chromatography based analytical methods for measurement of inorganic anions fluoride, chloride, chlorate, bromide and bromate in drinking water.
- Applied and optimized a photolytic reduction process for removing disinfection byproducts, bromate and chlorite in drinking water.
- Evaluated the scavenging effect of natural organic matter (NOM) on a photolytic water treatment process.
- Analyzed the effect of process variables, pH, reagent dose and UV irradiance on the functioning of UV-Sulfite Advanced Reduction Process (ARP).
- Developed a mechanistic model to estimate rate constants for PFOA defluorination with UV-Sulfite ARP.

GRADUATE RESEARCH ASSISTANT (12/2007 – 01/2010)
Texas A&M AgriLife Research, Texas A&M University, College Station, TX

- Conducted perimeter air quality sampling for particulate matter (PM) emissions from animal feeding operations.
- Developed PM emission factors for cotton harvesting operations with inverse dispersion modeling technique.
- Performed a comparative study of AERMOD and ISCST3 models for application to fugitive PM emissions.
- Tested a new dispersion modeling protocol to reduce uncertainty in measuring emissions from harvesting operations.

TEACHING EXPERIENCE

SUBSTITUTE LECTURER (Semesters: Fall 2017, 2018)
Dept. of Civil & Environmental Engineering, Prairie View A&M University, Prairie View, TX

- Developed a lecture module on fundamentals of life cycle assessment (LCA) for senior/graduate level courses
- Delivered lectures on LCA to *GNEG 5193*, graduate multidisciplinary course in *Energy & Sustainability*
- Delivered lectures on water chemistry to *CVEG 5133*, graduate course in *Environmental Engineering*

TEACHING ASSISTANT (Semesters: Fall 2009,2011,2012)
Dept. of Civil Engineering, Texas A&M University, College Station, TX
Dept. of Biological & Agricultural Engineering, Texas A&M University, College Station, TX

- Prepared lecture PowerPoint slides and homework assignments, for two senior level courses: *Engineered Environmental Systems (CVEN 402)* and *Air Pollution Engineering (BAEN 477)*
- Mentored undergraduate students in laboratory instrumental analysis for water/wastewater evaluation
- Conducted help sessions covering design of air pollution and wastewater treatment systems
- Trained students on dispersion modeling software and meteorological data processing

PEER-REVIEWED PUBLICATIONS

- **V.S.V. Botlaguduru**, R.R. Kommalapati, Z. Huque, *Long-term Meteorologically Independent Trend Analysis of Ozone Air Quality at an Urban Site in the Greater Houston Area*. Journal of the Air & Waste Management Association, (2018). 68(10): 1051-1064.
- I. Hossan, **V.S.V. Botlaguduru**, H. Du, R.R. Kommalapati, Z. Huque. *Air Quality Impact of Biomass Co-firing with Coal at a Power Plant in the Greater Houston Area*. Open Journal of Air Pollution, (2018). 7: 263-285.
- R.R. Kommalapati, M. Shahriar, **V.S.V. Botlaguduru**, H. Du, Z. Huque, *Relative Contribution of Different Source Categories to Ozone Exceedances in the Houston-Galveston-Brazoria Area*. Journal of Environmental Protection, (2018). 9, 847-858.
- R.R. Kommalapati, I. Hossan, **V.S.V. Botlaguduru**, H. Du, Z. Huque, *Life Cycle Environmental Impact of Biomass Co-Firing with Coal at a Power Plant in the Greater Houston Area.* Sustainability, (2018). 10(7): 2193-2210.
- J. Chipindula, **V.S.V. Botlaguduru**, H. Du, R. R. Kommalapati, Z. Huque, *Life Cycle Environmental Impact of Onshore and Offshore Wind Farms in Texas.* Sustainability, (2018). 10(6): 2022-2039.
- B. Jung, A. Safan, **V.S.V. Botlaguduru**, B. Batchelor, A. Abdel-Wahab. *Impact of Natural Organic Matter on Bromate Removal in the Sulfite/UV-L Advanced Reduction Process*. Water Science and Technology: Water Supply, (2016). 17 (2): 461-471.
- L. Wang, B. Batchelor, S.D. Pillai, **V.S.V. Botlaguduru**. *Electron Beam Treatment for Potable Water Reuse: Removal of Bromate and Perfluorooctanoic Acid*. Chemical Engineering Journal, (2016). 302: 58-68.
- **V.S.V. Botlaguduru**, B. Batchelor, A. Abdel-Wahab. *Application of UV-Sulfite advanced reduction process to bromate removal*. Journal of Water Process Engineering, (2015). 5: 76-82.
- W.B. Faulkner, L.B. Goodrich, **V.S.V. Botlaguduru**, S.C. Capareda, C.B. Parnell. *Particulate Matter Emission Factors for Almond Harvest as a Function of Harvester speed*. Journal of the Air and Waste Management Association, (2009). 59: 943-949.

Under Review

- **V.S.V. Botlaguduru**, L. Wang, B. Jung, A. Abdel-Wahab, B. Batchelor. *Defluorination of Aqueous Perfluorooctanoic (PFOA) acid with UV-Sulfite Advanced Reduction Process: Kinetics and Effect of Process Variables*. Sustainable Environment Research.
- **V.S.V. Botlaguduru**, B. Jung, A. Abdel-Wahab, B. Batchelor. *Photolytic Removal of Aqueous Chlorite and Minimizing Chlorate Formation: Effect of Natural Organic Matter, Sulfite and Alkalinity*. Journal of Environmental Chemical Engineering.
- R.R. Kommalapati, H. Du, S.P. Potluri, **V.S.V. Botlaguduru**. *Treatment of Shale Oil Produced Water with Zwitterion-Modified Forward Osmosis Membrane*. Water and Environment Journal.
- **V.S.V. Botlaguduru**, R.R. Kommalapati, Z. Huque, *Meteorological Detrending of Long-Term (2003-2017) Ozone and Precursor Concentrations at Three Sites in the Houston Ship Channel Region*. Journal of the Air & Waste Management Association.

CONFERENCE PRESENTATIONS

- I. Hossan, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati., *Air Quality Effects of Biomass Co-firing with Coal at a Houston Area Power Plant*. A&WMA's 111th Annual Conference, Hartford, CT, June 25-28, 2018. Air & Waste Management Association.
- J. Chipindula, **V.S.V. Botlaguduru**, H. Du, R.R. Kommalapati. *Life Cycle Environmental Impact of Onshore and Offshore Wind Farms in Texas: Sensitivity Analysis for Material and Manufacturing Stages*. A&WMA's 111th Annual Conference, Hartford, CT, June 25-28, 2018. Air & Waste Management Association.
- I. Hossan, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati. *Impact of Biomass Cofiring with Coal on the Air Quality of the Houston Area*. The ASAR_International Conference on Renewable Energy, Green Technology & Environmental Science, Bhubaneswar, India, December 17th, 2017. Asian Society for Academic Research.
- J. Chipindula, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati. *Evaluation of the Life Cycle Environmental Impact of Onshore and Offshore Wind Farms in Texas*. International Conference on Environmental Systems Research, Singapore, December 14-16, 2017. Environment and Agriculture Society.
- I. Hossan, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati. Effects of Biomass Cofiring with Coal on Air Quality in the Greater Houston Area. A&WMA's 110th Annual Conference, Pittsburgh, PA, June 5-8, 2017. Air & Waste Management Association.
- **V.S.V. Botlaguduru**, B. Batchelor, A. Abdel-Wahab. *Bromate removal using Sulfite-UV Advanced Reduction Process*. Water Quality Technology Conference, Long Beach, CA, Nov 3-6, 2013. American Water Works Association.
- **V.S.V. Botlaguduru**, J.D. Wanjura, R.O. McGee, and C.B. Parnell. *Comparison of AERMOD and ISCST3 Emissions Factors for PM from Cotton Harvesting*. Beltwide Cotton Conference, New Orleans. Louisiana, Jan 4-7, 2010. The Cotton foundation.

OTHER/STUDENT PRESENTATIONS

- **V.S.V. Botlaguduru**, R.R. Kommalapati., *Energy Engineering Minor – Coursework and Career Opportunities*. Introductory Sessions to Freshman Engineering Students, Prairie View, TX, July 20, 2018. Prairie View A&M University.
- **V.S.V. Botlaguduru**, D. Choe, R.R. Kommalapati., *Transportation Engineering – Coursework and Career Opportunities*. Introductory Sessions to Freshman Engineering Students, Prairie View, TX, July 20, 2018. Prairie View A&M University.
- A. Howard, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati. *Analysis and Development of Emission Factors for Goat Farm Operations*. A&WMA's 111th Annual Conference & Exhibition. Hartford, CT, June 25-28, 2018. Air & Waste Management Association.
- A. Howard, **V.S.V. Botlaguduru**, H. Du, R.R. Kommalapati. *Analysis of Air Pollutant Emissions from a Goat Farm Operation*. The 13th Annual Research Symposium, Prairie View, TX. April 5, 2018. Prairie View A&M University.
- B. Turner, **V.S.V. Botlaguduru**, H. Du, R.R. Kommalapati. *Evaluation of Coagulation and Flocculation as Pretreatment of Produced Water for COD and Turbidity Reduction*. The 13th Annual Research Symposium, Prairie View, TX, April 5, 2018. Prairie View A&M University.
- M. Babayev, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati. *The Effect of Pretreatment with L-DOPA Modified Ultrafiltration on the Forward Osmosis for Produced Water Treatment*. The 13th Annual Research Symposium, Prairie View, TX, April 5, 2018. Prairie View A&M University.
- A. Howard, H. Du, **V.S.V. Botlaguduru,** R.R. Kommalapati. *Analysis of Air Pollutant Emissions and Meteorological Impacts at a Goat Farm Operation*. ERN Conference in STEM. Washington, DC. February 22-24, 2018. National Science Foundation.
- M. Babayev, S.P. Potluri, H. Du, **V.S.V. Botlaguduru**, R.R. Kommalapati, *Treatment of Produced Water from Shale Oil Extraction with L-DOPA Coated Forward Osmosis (FO) membranes and Reverse Osmosis (RO) process*, 14th Annual Texas A&M University System (TAMUS) Pathways Student Research Symposium, Stephenville, Texas. November 2-3, 2017, Tarleton State University.
- K. C. Dilone, A. Howard, **V.S.V. Botlaguduru**, R.R. Kommalapati, *Monitoring Air Pollutant Emissions from Goat Farm Operations*. Annual Student Research Symposium of Summer Research Experience Program. Prairie View, TX. July 28, 2017. Prairie A&M University.

FUNDED RESEARCH GRANTS

- *"Lifecycle Environmental Impact of High-Speed Rail System in the I-45 Corridor*", Co-PIs: **V.S.V. Botlaguduru** and D. Choe, PI: R.R. Kommalapati. U.S. Dept. of Transportation, thru Transportation Consortium of South Central States (Tran-SET), Louisiana State University, Project no. 8-17-017PP **$68,500**
- "*Energy and Nutrient Recovery from Goat Manure by Anaerobic Co-Digestion with Cotton Gin Trash and Food Waste*", Co-PIs: **V.S.V. Botlaguduru**, H. Du and R. Awal, PI: R.R. Kommalapati. U.S. Dept. of Agriculture (CBG Program), Grant no. 2018-38821-27750 **$300,000**

SUBMITTED RESEARCH PROPOSALS

- "*Zero-Waste Poultry Processing with Sequential Membrane Filtration and Anaerobic Digestion*", Co-PIs: H. Du, **V.S.V. Botlaguduru**, E. Risch and R. Awal, PI: R.R. Kommalapati. U.S. Dept. of Agriculture (CBG Program) USDA-NIFA-CBGP-006531 $300,000
- "*Zero-Waste Poultry Processing to Improve Food Safety and Sustainability*", Co-PIs: H. Du, **V.S.V. Botlaguduru**, A. Thompson and R. Awal, PI: R.R. Kommalapati. National Science Foundation (Agriculture and Food Research Initiative: Competitive Grants Program) $500,000

STUDENT MENTORING

- Brittany Turner, B.S. (Civil Engineering, Expected: Dec, 2018), **Project**: Evaluation of Coagulation and Flocculation as Pretreatment for Produced Water from Shale Fracking Operations
- De Jaune' Bickham, B.S. (Civil Engineering, Expected: Dec, 2018), **Project**: Biochemical Characterization of Food Waste from Campus Dining Facility
- Kelvin Castillo Dilone, B.S. (Civil Engineering, Expected: May, 2019), **Project**: Monitoring Air Pollutant Emissions from Goat Farm Operations
- Poojan Upadhyaya, M.S. (Engineering, Expected: Dec, 2018), **Thesis**: Meteorological Detrending of Ozone at Three Sites in the Dallas-Fort Worth Area: Application of KZ -filter Method
- Arndreya Howard, M.S. (Engineering, Aug, 2018), **Thesis**: Air quality Measurements and Comparative Analysis for Goat Farm Operations
- Iqbal Hossan, M.S. (Engineering, Dec, 2017), **Thesis**: Impact of Biomass Co-firing With Coal on The Air Quality of Greater Houston Area: Life Cycle Assessment and Photochemical Modeling
- Jesuina Chipindula, M.S. (Engineering, Dec, 2017), **Thesis**: Environmental Life Cycle Impact of Onshore & Offshore Wind Farms in Texas
- Sai P. Potluri, M.S. (Engineering, Dec, 2017), **Thesis**: Shale Oil Produced Water Treatment using L-DOPA Coated Forward Osmosis Membranes

PROFESSIONAL MEMBERSHIP

- Air & Waste Management Association (#1253343)
- American Water Works Association (#02438277)

TECHNICAL SKILLS

Mathematical/Statistical Tools: R, MATLAB, MS Office, MS Access
Environmental Software: AERMOD, SimaPro, ISCST3
Analytical Instruments: Ion/Gas Chromatography, UV/Vis Spectrophotometer, Particle Size Analyzer

OTHER ACTIVITIES

- Reviewer, Journal of Environmental Chemical Engineering, Journal of Water Process Engineering
- Judge, Student Poster Competition, College of Engineering, Prairie View A&M University (2017, 2018)
- Certificate in Research Proposal Development; Panther Institute Grant Writing Workshop (May, 2017)
- Mentor, Summer Research Experience for High School Students, Prairie View A&M University (2017)
- Officer, Texas A&M University Chapter-Association of Environmental Engineering Students (2013)