NISHIT SHETTY

Assistant Professor
Department of Civil, Environmental & Architectural Engineering
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Link to more recent CV

EDUCATION

Ph.D.	**Washington University in Saint Louis,** Energy, Environmental and Chemical Engineering *Dissertation: Identifying and resolving artifacts associated with the measurement and characterization of light absorbing organic aerosols.*	2016-2021
B.Tech.	**Indian Institute of Technology (IIT), Gandhinagar,** Chemical Engineering	2012-2016

ACADEMIC APPOINTMENTS

Assistant Professor	Civil, Environmental & Architectural Engineering, University of Kansas	2024 - present
Postdoctoral Associate	Civil and Environmental Engineering, Virginia Tech Characterized influenza A virus shedding in humans during a controlled human challenge study at the Emory University Hospital.	2022 - 2024
Postdoctoral Fellow	Energy, Environmental and Chemical Engineering, Washington University in St. Louis Fabricated a breathalyzer for rapid detection of SARS-CoV-2 virus particles. The technology was licensed and is undergoing commercialization.	2021-2022

AWARDS AND HONORS

Post-Ph.D.

Group achievement award for sampling mission, NASA	2022

Ph.D.

Travel assistance, Air and waste management association	2021
Aerosol Summer School, PNNL: Sponsored for a summer visit to PNNL	2019
Travel Grant, American Association for Aerosol Research	2019
Graduate Student Teaching Assistant Award, Washington University in St. Louis	2019
Top poster contest winner, International Aerosol Conference	2018

Undergraduate

Institute's Gold Medal: First rank, Chemical Engineering, IIT Gandhinagar	2016
Award for Undergraduate Publication, IIT Gandhinagar	2016
Prof. M. H. Divekar scholarship: Awarded for excellence in Chemical Engineering courses, IIT Gandhinagar	2015, 2016
MAGEEP Fellowship, Washington University in St. Louis	2015

JOURNAL PUBLICATIONS Total: 17 || first/co-first author: 5 || corresponding author: 1
* denotes equal contribution; † denotes corresponding author

Shetty, N., Shephard, M. J., Rockey, N. C., Macenczak, H., Traenkner, J., Danzy, S., ... & Lakdawala, S. S. (2024). Influenza virus infection and aerosol shedding kinetics in a controlled human infection model. *Journal of Virology*. *Editor's pick article*

Kormos, D. A., **Shetty, N. J.**, Gall, E. T., Prussin, A. J., Pruden, A., & Marr, L. C. (2024). Bipolar Ionization Did Not Reduce Airborne Bacteria in a Lecture Hall. *ACS ES&T Air*.

Kapoor, T. S., Navinya, C., Apte, A., **Shetty, N. J**., Lokhande, P., Singh, S., ... & Venkataraman, C. (2024). Spatial distribution in surface aerosol light absorption across India. *Geophysical Research Letters.*

Ferreri, L., Seibert, B., Caceres, J., Patatanian, K., ... **Shetty,N.**, ... & Lowen, A. C. (2024). Dispersal of influenza virus populations within the respiratory tract shapes their evolutionary potential. *bioRxiv*.

Seibert, B., Cáceres, C. J., Gay, L. C., **Shetty, N**., Faccin, F., Carnaccini, S., ... & Perez, D. R. (2024). Air-Liquid Interface Model for Influenza Aerosol Exposure In Vitro. *bioRxiv.*

Shetty, N. †, Liu, P., Liang, Y., Sumlin, B., Daube, C., Herndon, S., ... & Chakrabarty, R. K†. (2023). Brown carbon absorptivity in fresh wildfire smoke: associations with volatility and chemical compound groups. *Environmental Science: Atmospheres*.
Highlighted on the journal cover: September 2023.
Ghumra, D. P.*, **Shetty, N.***, McBrearty, K. R.*, Puthussery, J. V., Sumlin, B. J., Gardiner, W. D., ... & Chakrabarty, R. K. (2023). Rapid direct detection of SARS-CoV-2 aerosols in exhaled breath at the point of care. *ACS Sensors*.
Top 20 most downloaded ACS Sensors articles in last 12 months (as of September 2024).

Chakrabarty, R. K., **Shetty, N. J.***, Thind, A. S.*, Beeler, P., Sumlin, B. J., Zhang, C., ... & Mishra, R. (2023). Shortwave absorption by wildfire smoke dominated by dark brown carbon. *Nature Geoscience*.

Kapoor, T. S., Phuleria, H. C., Sumlin, B., **Shetty, N.**, Anurag, G., Bansal, M., ... & Venkataraman, C. (2023). Optical Properties and Refractive Index of Wintertime Aerosol at a Highly Polluted North-Indian Site. *Journal of Geophysical Research: Atmospheres*.

Puthussery, J., Ghumra, D., McBrearty, K., Doherty, B., Sumlin, B., Sarabandi, A., Mandal, A., **Shetty, N.**, … Yuede, C. M., Cirrito, J. R., & Chakrabarty R. K. (2023) Real-time environmental surveillance of SARS-CoV-2 aerosols. *Nature Communications*.

Kumar, J., Paik, T., **Shetty, N. J.**, Sheridan, P., Aiken, A. C., Dubey, M. K., & Chakrabarty R. K. (2022) Correcting for filter-based aerosol light absorption biases at the Atmospheric Radiation Measurement program's Southern Great Plains site using photoacoustic measurements and machine learning. *Atmospheric Measurement Techniques*.

Shetty, N., Beeler, P., Paik, T., Brechtel, F. J., & Chakrabarty, R. K. (2021). Bias in quantification of light absorption enhancement of black carbon aerosol coated with low-volatility brown carbon. *Aerosol Science and Technology*.

Sumlin, B., Fortner, E., Lambe, A., **Shetty, N.**, Daube, C., ... & Chakrabarty, R. K. (2021). Diel Cycle Impacts on the Chemical and Light Absorption Properties of Organic Carbon Aerosol from Wildfires in the Western United States. *Atmospheric Chemistry and Physics*.

Shetty, N. J., Pandey, A., Baker, S., Hao, W. M., & Chakrabarty, R. K. (2019). Measuring light absorption by freshly emitted organic aerosols: optical artifacts in traditional solvent-extraction-based methods. *Atmospheric Chemistry and Physics*.

Pandey, A., **Shetty, N. J**., & Chakrabarty, R. K. (2019). Aerosol light absorption from optical measurements of PTFE membrane filter samples: sensitivity analysis of optical depth measures. *Atmospheric Measurement Techniques.*

Sumlin, B. J., Heinson, Y. W., **Shetty, N.**, Pandey, A., Pattison, R. S., Baker, S., ... & Chakrabarty, R. K. (2018). UV–Vis–IR spectral complex refractive indices and optical properties of brown carbon aerosol from biomass burning. *Journal of Quantitative Spectroscopy and Radiative Transfer*.

Raliya, R., Som, A., **Shetty, N**., Reed, N., Achilefu, S., & Biswas, P. (2016). Nano-antacids enhance pH neutralization beyond their bulk counterparts: synthesis and characterization. *RSC advances*.

MANUSCRIPTS UNDER PREPARATION/REVIEW

Vargas Maldonado, N.*, **Shetty, N.***, Ferreri, L., …Marr. L., Lakdawala, S., Lowen, A., Controlled human influenza infection reveals heterogeneous expulsion of infectious virus into air (*under review in Cell*)

U.S. PATENT

R. K. Chakrabarty, N. J. Shetty, B. J. Sumlin, C. Yuede, J. R. Cirrito (2023) "Rapid, Single-use Methods and Systems for Electrochemical Analysis of Pathogens in Exhaled Breath" U.S. Provisional Patent PCT/US2023/016822

SELECT TALKS AND POSTERS

1. University of Kansas, Medical Center, October 2024: Influenza A Virus Shedding During a Controlled Human Infection Study *(Invited)*
2. University of Kansas, Jan 2024: Particulate Transport Across Built Environments: Impacts of Airborne Contaminants in a Changing Climate., (*Invited*)
3. American Association for Aerosol Research 40th Annual Conference, Oct 2022: Brown Carbon Light Absorption from Wildfire Plumes Related to Low-volatility Organic and Nitrogen-containing Organic Compounds., (*Oral*)
4. Atmospheric Optics: Aerosols, Visibility, and the Radiative Balance, Oct 2021: Measuring light absorption by freshly emitted organic aerosols: optical artifacts in traditional solvent-extraction-based methods., (*Oral*)
5. American Association for Aerosol Research 38th Annual Conference, Oct 2020: Imaginary Refractive Index Comparison of Water- and Methanol-soluble Brown Carbon Aerosol from western US Wildfires., (*Oral*)
6. American Association for Aerosol Research 37th Annual Conference, Oct 2019: Biases in Quantifying Light Absorption Enhancement for Coated Black Carbon Aerosol Using a Thermodenuder., (*Oral*)
7. American Association for Aerosol Research 37th Annual Conference, Oct 2019: Toward Development of a Metric to Relate Molecular Characteristics with Optical Properties for Biomass Burning Aerosol., (*Poster*)
8. Xth International Aerosol Conference, Sep 2018: Measuring Light Absorption by Organic Aerosols: Correction Factors for Solvent Extraction Based Photometry Techniques., (*Oral)*
9. Xth International Aerosol Conference, September 2018: Effects of Thermodenuding on the Morphology and Optical Properties of Soot., (*Poster)*

TEACHING EXPERIENCE

University of Kansas

Lecturer: CE 330 – Fluid Mechanics — Spring 2025
Lecturer: CE 772 – Physical Principles of Environmental Engineering Processes — Fall 2024

Virginia Tech

Guest Lecturer: CEE 4144 – Air Resource Engineering — Fall 2022

Washington University in St. Louis

Teaching Assistant: EECE 301 – Transport Phenomenon I — Fall 2017, 2018
(Awarded the department teaching assistant award for Fall 2018)
Teaching Assistant: EECE 402 – ChE Capstone — Spring 2018

Indian Institute of Technology Gandhinagar

Teaching Assistant: CL 352 – Chemical Engineering Lab IV — Spring 2016

MENTORING EXPERIENCE

Virginia Tech

David Kormos, Ph.D. candidate — 2022-2024
Ted Balabanski, B.S. — 2023-2024

Washington University in St. Louis

Joshin Kumar, Ph.D. candidate — 2021-2022
Dishit Ghumra, Ph.D. candidate — 2021-2022
Adhishree Apte, B.S. — 2021-2022
Ganesh Chelluboyina, Ph.D. candidate — 2020-2021
Patrick Wiecko, B.S. — 2020-2021
Esther Koh, M.S. — 2019-2021
Theodore Paik, M.S. — 2019-2021
Akhil Ashar, B.S. — 2019
Christopher Walker, B.S. — 2018

PROFESSIONAL SERVICE & AFFILIATIONS

University of Kansas

Member, School of Engineering Library Committee, 2024-present
Member, Tenure-track transportation engineering faculty search committee, 2024-present

Peer Review

Research proposal

National Science Foundation

Journals

Optics Express; Aerosol Science and Technology; Air Quality, Atmosphere & Health; Journal of Advances in Modeling Earth Systems; Atmosphere; Energies; Air

Professional Membership

Indoor Air — 2024-present
American Association for Aerosol Research (AAAR) — 2017-present