

G.M. DINUKA HARSHANA GALLABA

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Education and Research

Southern Illinois University Carbondale IL USA (SIUC) Aug 2020

- **PhD (Applied Physics)**

Gas Adsorption and Material Characterization

- Study of adsorption-induced structural transition in ZIF-8
- Synthesis and Characterization of MOFs (BET, Pore Distribution)
- Pore distribution analysis of Shale Rock - Collaborative project-MIT
- Binary Gas Mixtures on Graphite- Analysis of Adsorption Kinetics- Collaboration Denver U
- MoS₂ (Molybdenum disulfide)- CO₂ and Methane adsorption

Data Mining and Statistical Analysis

Vetting the Energy and Security of Smart Buildings with Data Science
Analyzing sensor data, Data Mining and Machine learning techniques.

Southern Illinois University Carbondale IL USA (SIUC) Dec 2014

- **M.S. Physics** GPA (3.78/4.0)

University of Sri Jayewardenepura Sri Lanka

July 2010

- **B.S Major in Physics (Minor in Mathematics and Statistics)**

Final Project:

“Wireless Sensor System using Zigbee TM” - A perfect solution for complex wired systems that are used in many industrial and domestic premises.

Professional Experience

Visiting Assistant Professor of Physics, Centenary College of Louisiana, Shreveport LA 2020 Aug – Present

Teaching and Research Assistant, Southern Illinois University Carbondale, IL 2013-2020 May

Temporary Lecturer, Uva Wellassa University, Sri Lanka 2011-2012 Feb

Temporary Instructor, Department of Physics, University of Sri Jayewardenepura 2010 July -2011

Grants and Awards

Dissertation Research Assistantship Award Southern Illinois University 2019

Doctoral Graduate Fellowship Award at Southern Illinois University Carbondale IL 2018

Interdisciplinary Team **Research Grant** through Science and Technology Center at Purdue University 2018
National Science Foundation

Graduate Student Travel Grant (IAS) for 13th Fundamentals of Adsorption Cairns Australia 2019

Workshops and Trainings

NSF STC Professional Development Workshop

2018

National Science Foundation sponsored professional development workshop for Ph.D. students
Trained in NSF grant proposal writing, and mentoring students in research

Introduction to Data Science & Interdisciplinary Research Team workshop at Purdue University.

2018

Center for Science of Information, NSF Science & Technology Center Department of Computer Science, Purdue University

RASPA Workshop

2018

Molecular simulations for adsorption and diffusion in Nano porous materials, modeling of ionic liquids, and other applications

Department of Chemical and Biological Engineering McCormick School of Engineering, Northwestern University

Skills

- Platforms: **Unix, Linux and windows**
- Programming and scripting: **Python, R, C++, SQL, Scala,**
- Technical Skills: **Data mining, Statistical analysis and process control, Graph Analytics (Spark GraphX)**
- Scientific Computing: MATLAB, Mathematica, Molecular simulation in RASPA, Quantum ESPRESSO
- Microcontroller Programming, circuit simulations and design

Laboratory Skills

- XRD, Mass Spectroscopy (Open ion Source, RGA)
- UV-Vis, FTIR,
- BET measurements
- Raman Spectroscopy
- High Vacuum systems.
- Cryogenic Systems.
- Data acquisition (**LabView**)
- Highly precise **PID controllers**
- Safety and Lab Management

Journal Publications

Gallaba, Dinuka H., and Aldo D. Migone. "Thermodynamic evidence of a transition in ZIF-8 upon CH₄ sorption." *Physical Chemistry Chemical Physics* 21, no. 29 (2019): 16252-16257.

Gallaba, Dinuka H., Jhonny Villarroel-Rocha, Karim Sapag, and Aldo D. Migone. "Carbon monoxide adsorption in ZIF-8: Kinetics and equilibrium." *Microporous and Mesoporous Materials* (2018). Volume 265, 15 July 2018, Pages 227–233

Gallaba, Dinuka H., Alberto G. Albasa, and Aldo D. Migone. "Evidence of Gate-Opening on Xenon Adsorption on ZIF-8: An Adsorption and Computer Simulation Study." *The Journal of Physical Chemistry C* 120, no. 30 (2016): 16649-16657.

Li, Shifan, Thushani De Silva, Iskinder Arsano, **Dinuka Gallaba**, Robinson Karunanithy, Milinda Wasala, Xianfeng Zhang et al. "High Adsorption of Benzoic Acid on Single Walled Carbon Nanotube Bundles." *Scientific Reports* 10, no. 1 (2020): 1-10.

Collaborative Work

Penn, Matthew J., et al. "Acceleration of Coronal Mass Ejection Plasma in the Low Corona as Measured by the Citizen CATE Experiment." *Publications of the Astronomical Society of the Pacific* 132.1007 (2019): 014201.

De Silva, T., **Gallaba, D.**, Karunanithy, R., Wasala, M., Zhang, X., Li, S., Arsano, I., Sivakumar, P., Tsige, M., Ma, X. and Talapatra, S., 2019. Synthesis and Characterization of Single Walled Carbon Nanotubes (SWNT) Through Direct Decomposition Ferrocene. *Bulletin of the American Physical Society* (2019).

Chathurangi H. Pathiravasan, **Dinuka Gallaba**, "A Computational Model for Sound Source Recognition", 2017 SIAM Conference on Computational Science and Engineering, February 27-March 3, 2017; Atlanta, GA.

Conference Presentations

"Thermodynamic Evidence of Structural Transition of ZIF-8 upon Methane Adsorption", 13th Fundamentals of Adsorption, Cairns Australia 2019 May.

Gallaba, Dinuka, and Aldo Migone. "Methane Adsorption on Zeolitic Imidazolate Framework-8 (ZIF-8)." In APS Meeting Abstracts. 2019.

Gallaba, Dinuka , Migone, Aldo. Methane Adsorption on Zeolitic Imidazolate Framework-8 (ZIF-8)", 2018 AIChE Annual Meeting:

Gallaba, Dinuka H., Chris Mandrell, and Aldo D. Migone. "Study of Carbon Monoxide and Neon Adsorption on Zeolitic Imidazolate Framework-8 (ZIF-8)." *Bulletin of the American Physical Society* 62 APS March Meeting 2017 March 13–17, 2017; New Orleans, Louisiana

Dinuka H. Gallaba, Aldo D. Migone, Karim Sapag, Jhonny Villaroel "Gate-Opening Transition of Zeolitic Imidazolate Framework -8 in Xenon, Adsorption and Carbon Monoxide Adsorption" A.P.S. Bulletin, APS March Meeting 2016, March 14-18, Baltimore, MD

Dinuka Gallaba, Brice Russell, Aldo Migone, "Study of Xenon Adsorption on Zeolitic Imidazolate Framework -- 8 (ZIF-8)" B. A. P. S. vol. 60, no. 1, APS March Meeting 2015 March 2–6, 2015; San Antonio, Texas

Conference Posters

Dinuka Gallaba* and Zhen Li and MyVan Vo, Vetting the Energy and Security of Smart Buildings with Data Science, Contributed Poster Presentations: Section on Physical and Engineering Sciences, Joint Statistical Meetings 2019 Denver CO.

Dinuka H. Gallaba and Aldo D. Migone Carbon Monoxide Adsorption on Zeolitic Imidazolate Framework-8 (ZIF-8), 2017 Midwest Thermodynamics and Statistical Mechanics Conference (MTSM), June 4-6, University of Notre Dame, Notre Dame, IN.

Societies and Memberships

International Adsorption Society (IAS)	2018 - Current
Materials Research Society (MRS) Southern Illinois University Chapter – Vice President	2017-2019
American Physical Society (APS) – Graduate Student Membership	2014-Current
American Institute of Chemical Engineers (AIChE)	2018-Current

Teaching

Centenary College of Louisiana – Department of Physics and Engineering

Visiting Assistant Professor (Current Position)

- Thermal & Statistical Mechanics PHYS 416 (Fall 2020)
- Conceptual Physics PHYS 103 and Laboratory PHYS 113 (Fall 2020)
- Physics I –PHYS 104 and PHYS 114 Labs

Southern Illinois University –Department of Physics

Laboratory Teaching Assistant

Supervising labs, grading all assignments, and meeting with students individually, Maintain online grade book and course materials (MyCourse by D2L)

- PHYS 253A College Physics (Mechanics Lab) Algebra Based Course for non-science and life science majors (Fall 2013,2015,2016, Spring 2015,2016, Summer 2016)
- PHYS 253B College Physics (Electricity and Magnetism) Algebra Based Course for non-science and life science majors (Fall 2017, Spring 2014,2017)
- PHYS 255A University Physics (Mechanics Lab), Calculus based course for Engineering and Science majors (Summer 2017)
- PHYS 255B University Physics (Electricity and Magnetism) Calculus based course for Engineering and Science majors (Spring 2014, 2020, Fall 2014,2017)

Teaching Assistant

Responsibilities included assisting main instructor with class discussions, grading and proctoring exams.

- PHYS 203A College Physics (Fall 2016)
- PHYS 205A University Physics (Spring 2014)
- PHYS 205B University Physics (Spring 2020)
- PHYS 476C Computational Physics, Fundamentals of Python – Assisting Main Instructor and main TA with the class (Spring 2020)

University of Sri Jayewardenepura (Sri Lanka) -Department of Physics

Laboratory Demonstrator (Instructor)

Elementary Physics Laboratory: Mechanics, Sound and waves, electricity and Optics

Volunteering and Professional Services

Participate in Citizen Continental-America Telescopic Eclipse (CATE) Experiment: Testing and preparation of telescopes and equipment for the 2017 total solar eclipse at SIU site.	2017
Judge for the undergraduate research forum poster competition at SIUC.	2016-2018
Judge for the AIChE (American Institute for Chemical Engineers) undergraduate poster competition Pittsburgh PA.	2018
Department volunteer - Physics and astronomy promotions at community outreach events.	2019-2020
Journal referee for Microporous and Mesoporous Materials (Elsevier Journal)	2018-Current