G. L. Dimithree S. Kahanda, Ph.D.

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Education and Training

Present, **Lecturer (probationary),** University of Peradeniya, Physics
2020**,** **Post-doctoral Scholar**, Rice University (Advisor: Dr. Anatoly Kolomeisky)
2018-2019, **Post-doctoral Scholar**, Rice University (Advisor: Dr. Joff Silberg)
2014-2017, **PhD in Physics**, GPA-3.72, University of Texas at Dallas (Advisor: Dr. Jason Slinker)
2011-2014, **M.Sc. in Physics**, GPA- 3.70, University of Texas at Dallas
2007-2011, **B.Sc. in Physics** with minors in chemistry & mathematics, GPA- 3.52, University of Peradeniya, Sri Lanka

Research and Work Experience

2020, Postdoctoral Scholar, Rice University (Kolomeisky Lab)
Research: Single molecular studies on DNA mismatch repair protein interactions
Skills: Theoretical biophysics modeling with Matlab

2018-2020, Post-doctoral Scholar, Rice University (Silberg Lab)
Research: Investigating electrochemical properties of natural and engineered metalloproteins

Skills: Protein expression and purification (microbiology, sterile technique, PCR, DNA/protein gel electrophoresis, chromatography), electrochemical (square wave voltammetry)

Involvements: Develop protein thin-film voltammetry methods, support collaborations between Synthetic Biology and Biochemical Engineering, contribute data to publications, present at conferences, mentor graduate students and undergraduates, support summer undergraduate program

2012- 2017, PhD Graduate Student, University of Texas at Dallas (Slinker Lab)

Thesis Project: Electrochemical measurements on self-assembled monolayers of DNA to follow anticancer drug activity and helicase interactions

Skills: DNA purification (HPLC methods, UV-Vis spectroscopy techniques, MALDI techniques), electrochemical methods (square wave voltammetry and cyclic voltammetry)

Involvements: Design and execute experiments, analyze and interpret data, publish peer reviewed papers, present new findings to superiors and collaborators, mentor under graduates

2010-2011 Undergraduate researcher, University of Peradeniya

Research: Analyzing organic compounds to use as gamma ray detectors

Skills: Handling radioactive materials and use of the geiger counter, UV-Vis Spectroscopy

Accomplishments: Hydroquinone was calibrated as a gamma ray detector compound

Teaching: Courses, Innovations, and Student Advising

Summer 2019, Teaching Innovations, Rice University

Bionetworks Matlab Teaching Module for Summer research program (2019), developed a teaching module for educating freshman and sophomore undergraduates on how to process complex imaging data (NSF funded program)

Teaching Activities

PHYS 1301, College Physics I (Fall 2014), 30% of instruction load, a lecture course at UT Dallas that covers Mechanics , Thermodynamics and E & M

PHYS 2325, Mechanics (Fall 2015), 30% of instruction load, a lecture course at UT Dallas that covers Principles of Newtonian Mechanics and Fundamentals of energy conservation

PHYS 2125, Physics Laboratory I (2012-2017), 100% of instruction load, a laboratory course at UT Dallas that covers Basic measurements and statistics in Mechanics

PH 103 / PH 104, Elementary Physics Laboratories 1 & 2 (2011-2012), 100% of instruction load, laboratory courses at the University of Peradeniya that covers fundamentals in Electricity and Magnetism

PH 101 / PH 102, General Physics 1 & 2 (2011-2012), 100% of instruction load, a lecture courses at the University of Peradeniya that covers Fundamentals in Physics

Student Advising

Ian Campbell (Rice grad student), 2018-2020

Daniel Han (Rice under grad student), 2019

Ashan Wetthasinghe (UT Dallas grad Student), 2017

Monica Lou (UT Dallas under grad student), 2015-2017

Kelly Cody (UT Dallas under grad student), 2017

Joshua Chari (UT Dallas under grad student), 2016

Yujie Zhu (McMaster U, grad student), Summer 2015

Peer Reviewed Publications

Campbell, I., Kahanda, D., Tseng, C., Pathiranage, T., Twum-Barimah, O., Atkinson, J.T., Bennett, G.N., Verduzco, R., and Silberg, J.J., Recombination of 2Fe-2S ferredoxins reveals difference in the inheritance of thermostability and electrochemical properties. (2020), *In press, Manuscript ID-sb-2020-00303t.R3*, *ACS Synthetic Biology,*

Campbell, I., Olmos, J., Xu W., Kahanda, D., Twum-Barimah, O., Kim, J., Atkinson, J.T., Bennett, G.N., Phillips, G.N., and Silberg, J.J., Prochlorococcus phage ferredoxin: structural characterization and interactions with cyanobacterial sulfite reductase. (2020), *Journal of Biological Chemistry,* jbc-RA120

Wu, B., Atkinson, J.T., Kahanda, D., Bennett, G.N., and Silberg, J.J., Combinatorial design of chemical-dependent protein switches for controlling intracellular electron transfer. (2020) *AIChE Journal,* 66 (3), e16796

Lin, K.Y., Burke, A., King, N., Kahanda, D., Mazaheripour, A., Bartlett, A., Dibble, D.J., McWilliams, M., Taylor, D., Jocson, J. and Minary, M., Enhancement of the Electrical Properties of DNA Molecular Wires Through Incorporation of Perylenediimide DNA Base Surrogates. (2019) *ChemPlusChem*. 84(4), 416-419

Kahanda, D., Singh, N., Boothman, D. A., and Slinker, J. D., Following Anticancer Drug Activity in Cell Lysates with DNA Devices (2018), *Biosensors and Bioelectronics*, 119, 1-9

Kahanda, D., DuPrez, K. T., Hilario, E., McWilliams, M. A., Wohlgamuth, C. H., Fan, L., and Slinker, J. D., Application of Electrochemical Devices to Characterize the Dynamic Actions of Helicases on DNA. (2018), *Analytical chemistry*, 90(3), 2178-2185

Kahanda, D., Chakrabarti, G., Mcwilliams, M. A., Boothman, D. A., and Slinker, J. D., Using DNA Devices to Track Anticancer Drug Activity (2016). *Biosensors and Bioelectronics*, 80, 647-653

Kahanda, D., and Sivakumar, V., A Possible Gamma-ray Detector using Hydroquinone, PURSE 2012 (Sri Lanka)

Oral Presentations

Kahanda, D., DuPrez, C. H., Fan, L., and Slinker, J. D., Kinetics and Thermodynamics of Helicase Binding with DNA devices, MRS Spring Meeting, April 17-21, 2017

Kahanda, D., Chakrabarti, G., Mcwilliams, M. A., Boothman, D. A., and Slinker, J. D., Using DNA devices to track anti-cancer drug activity, Joint Spring Meeting of the Texas Sections of APS, AAPT, and Zone 13 of the SPS, March 31-April 2, 2016

Kahanda, D., Chakrabarti, G., Boothman, D. A., and Slinker, J. D., Chip-based Synthetic Biology to Track Anticancer Drug Activity, Fall Joint Meeting of the Texas Section of the AAPT, Texas Section of the APS and Zone 13 of the Society of Physics Students, October 29-31, 2015

Poster Presentations

Kahanda, D., DuPrez, K. T., Hilario, E., McWilliams, M. A., Wohlgamuth, C. H., Fan, L., & Slinker, J. D, Application of Electrochemical Devices to Investigate the Dynamic Actions of Helicases on DNA, Texas Protein and Folding Conference, Cleveland, TX, April 12- 14, 2018

Kahanda, D., Chakrabarti, G., Mcwilliams, M. A., Boothman, D. A., & Slinker, J. D., Following anticancer drug activity in cell lysates with DNA devices, De Lange Conference on Bioelectronics, Rice University, Houston, TX, Dec.4-5, 2018

Tseng, C.P., Pathiranage, T.M.S.K., Kahanda, D., Campbell, I, Spark, N, Atkinson, J., Silberg, J., and Verduzco, R., Homologous Recombination of a Pair of Ferredoxins Yields Chimeras with Altered Midpoint Potential, De Lange Conference on Bioelectronics, Rice University, Houston, TX, Dec.4-5, 2018

Atkinson J.T., Su L., Wu B., Campbell I, J., Kahanda D., Bennett G. N., Ajo-Franklin C., & Silberg J. J., Chemical dependent protein switches as bioelectronic logic gates for controlling electron transfer, Gordon Research Conference, Andover, NH, June16-21, 2019

Campbell I. J., Kahanda D., Atkinson J. T., Sparks N., Kim J., Bennett G. N., and Silberg J. J., Lowering the midpoint potential of [2Fe-2S] ferredoxins through recombination of homologs, Gordon Research Conference, Andover, NH, June16-21, 2019

Awards

Margie Renfrow Award, 2017 – Graduate student award in research achievements at UT Dallas

PhD Small Grant Research Award, 2017-financial support for dissertation-based research and travel expenses at UT Dallas

APS Travel Award, 2016 – Travel award for graduate students from the Texas section of the American Physical Society

TSAPS Presentation Award, 2015- for the talk on Chip-based Synthetic Biology to Track Anticancer Drug Activity, at Texas Section APS conference

APS Travel Award, 2015 – Travel award for graduate students from the Texas section of the American Physical Society

University Colors for tennis, University of Peradeniya Sri Lanka, 2010

Involvement and Honorary Societies

Judge, IBB Summer Undergraduate Research Symposium, Rice University, 2019

Volunteer, IBB summer Academy, Rice University, 2019

Volunteer, NSF funded Research Experience for Undergraduates, 2019

Judge, Gulf Coast Undergraduate research symposium, Rice University, 2018

Judge, Biosciences Annual Research Symposium, Rice University, 2018

Volunteer, Texas Section of APS, Texas Section of AAPT, and zone 13 of the Society of Physics Students, 2017

Volunteer, community Garden, 2015-2107

Team member, UT Dallas Rugby women's team, 2016-2017

Committee member, UT Dallas Sri Lankan Students Association- 2013

Member, American Physical Society, 2014

Member, Honor Society, 2013

Member, Rotaract Club, Kandy Metropolitan, 2008- 2010

Member, Tennis team, University of Peradeniya, Sri Lanka, 2009-2011