CURRICULUM VITAE

Namal Wanninayake

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EDUCATION

PhD (Chemistry) (To be awarded in Fall 2019)
GPA – 3.77/4.00
University of Kentucky, Lexington (Department of Chemistry), USA
Advisor: Prof. Doo Young Kim

B.Sc., (Special Degree in Chemistry)
GPA – 3.59/4.00
January 2013
University of Peradeniya (Faculty of Science), Sri Lanka
Thesis: "*Preparation of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) nanospheres for the sustained release of Folic Acid*".
Advisors: Prof. Veranja Karunaratne and Prof. Nedra Karunaratne.

PROFESSIONAL APPOINTMENTS

Research Assistant

Jan 2016 – Present	Department of Chemistry, University of Kentucky, Prof. Doo Young Kim's laboratory.

Teaching Assistant

	Department of Chemistry, University of Kentucky
Aug 2014 - May 2015	Organic chemistry laboratory.
Aug 2015 – Dec 2015	Analytical chemistry laboratory.
Jan 2014 - May 2014	Department of Chemistry, The Open University of Sri Lanka.
Jan 2013 - Dec 2013	Department of Chemistry, University of Peradeniya, Sri Lanka.
Jan 2013 - Dec 2013	Post graduate institute of science, University of Peradeniya, Sri Lanka.

MENTORING

Fall 2017	A mentor for Broadening Participation in Materials Undergraduate Student Event at the 2017 MRS Fall Meeting – Trained an undergraduate student by completing a certain number of mutually determined goals by the mentor and mentee.
Fall 2016	Defined a project and advised an undergraduate student regarding the use of Microwave-assisted chemical vapor deposition reactor for the synthesis of catalysts for electrochemical CO_2 conversion.

HONORS AND RECOGNITIONS

June 2018	North American Membrane Society(NAMS) meeting at Lexington, KY. 1st Place in the Energy Category Student Poster award.
June 2018	Next Generation Electrochemistry (NGenE)-2018 Summer Institute. One of the 25 selected & funded advanced Ph.D. student and postdoc participants.
June 2018	Outstanding Poster Presentation, Fourth Annual Postdoctoral Research Symposium at the University of Kentucky.
Jan 2016	Experimental Program to Stimulate Competitive Research fellowship (KY NSF EPSCoR).
May 2015	Fast Start Award for outstanding initial overall progress towards the PhD degree.

PROPOSAL ACTIVITIES

Fall 2016	Team member of an Advanced Photon Source general user proposal for the use of X-ray scattering facility from synchrotron source at Argonne National Laboratory (Proposal no: GUP 46428). The proposal title: "*In-situ GISAXS and GIWAXS studies of Thickness, Aging and Plasma Doping on Processing of Titania Thin Films with*

Oriented 2D Hexagonal Close-Packed (HCP) Mesostructure".

SKILLS

Technical (regular use) Chemical Vapor Deposition(CVD), Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD), Nuclear Magnetic Resonance(NMR), UV-vis Spectroscopy, Fourier Transformed Infra-Red Spectroscopy (FTIR), X-Ray Photoelectron Spectroscopy (XPS), Impedance Spectroscopy, Thermogravimetric Analysis (TGA), Bulk electrolysis, Electrodeposition, Zeta Potential, Contact Angle goniometer and Gas Chromatography (GC).

Technical (casual use) Transmission Electron Microscopy (TEM), Scanning Transmission Electron Microscopy (STEM), Grazing Incidence Small Angle X-ray Scattering (GIWAXS), Grazing Incidence Wide Angle X-ray Scattering (GIWAXS), Focused Ion Beam (FIB).

Computer ImageJ, OriginPro, ChemDraw, Endnote, 3Ds Max modeling.

PROFESSIONAL EXPERIENCE

Graduate Research Assistant
October 2014 – Present

Prof. Doo Young Kim's laboratory
Department of Chemistry, University of Kentucky.

Nanostructured Materials: Synthesized Nitrogen-doped carbon materials by microwave-assisted chemical vapor deposition.

Electrocatalysts: Nitrogen-doped carbon catalysts were utilized and studied fundamental aspects of electrochemical CO_2 conversion to usable fuels and chemicals.

Electrochemical reactor Engineering: Designed a customized electrochemical flow cell reactor for the electrochemical carbon dioxide conversion.

Band Gap Engineering: Developed different methods to tune the band gap of titania to enhance visible light absorption and photocatalytic activity, prepared nitrogen and hydrogen doped mesoporous titania films using plasma generated by microwave-assisted chemical vapor deposition.

Photocatalysts: Produced hydrogen gas from photoelectrochemical water splitting, using doped and sensitized mesoporous titania films under UV and visible light illumination. Synthesized graphene quantum dots and sensitized mesoporous titania films for visible light photocatalysis.

X-ray Scattering: Studied the formation and thermal transformation mechanism of polymer templated titania thin films and their crystallization by in-situ grazing incidence small angle and wide-angle x-ray scattering (GISAXS and GIWAXS), respectively using synchrotron source at Argonne National Laboratory, Illinois.

Membrane Separations: Graphene Quantum Dot Integrated Cellulose Membrane composites were developed for small molecule separations.

INDUSTRIAL INTERNSHIP

Oct 2011 – Dec 2011 — Developed a method to recycle and reuse the bitumen in the wastewater - under the supervision of Mr. Roshan T. Kotuwegedara Bituminous Products Division (LANKEM CEYLON PLC) Sri Lanka - (Partial fulfillment of the special degree program in chemistry at University of Peradeniya, Sri Lanka).

PEER-REVIEWED PUBLICATIONS

Published

Pillar-Little, T.; **Wanninayake, N**.; Nease, L.; Heidary, D.; Glazer, E.; Kim, D. Superior Photodynamic Effect Of Carbon Quantum Dots Through Both Type I And Type II Pathways: Detailed Comparison Study Of Top-Down-Synthesized And Bottom-Up-Synthesized Carbon Quantum Dots. *Carbon* **2018**.

Colburn, A.; **Wanninayake, N**.; Kim, D.; Bhattacharyya, D. Cellulose-Graphene Quantum Dot Composite Membranes Using Ionic Liquid. *Journal of Membrane Science* **2018**, *556*, 293-302.

Syed Z. Islam, Allen D. Reed, **Namal Wanninayake**, Doo-Young Kim, and Stephen E. Rankin, Remarkable Enhancement of Photocatalytic Hydrogen Production in N_2/Ar Plasma Treated, Mesoporous TiO_2 Films, *The Journal of Physical Chemistry C,* **2016**, 120(26), 14069–14081.

Islam, S.; Reed, A.; Nagpure, S.; **Wanninayake, N**.; Browning, J.; Strzalka, J.; Kim, D.; Rankin, S. Hydrogen Incorporation By Plasma Treatment Gives Mesoporous Black TiO 2 Thin Films With Visible Photoelectrochemical Water Oxidation Activity. *Microporous and Mesoporous Materials* **2017**, 261, 35-43.

Namal Wanninayake, Veranja Karunaratne, Nedra Karunaratne, Preparation of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) nanospheres for the sustained release of Folic Acid, (*Peradeniya University Research Sessions*) PURSE **2012**; Volume 17; page 188. ISSN: 1391-4111 ISBN: 978-955-589-164-6.

In Preparation for Short-term Submission

Namal Wanninayake, Qianxiang Ai, Ruixin Zhou, Md Ariful Hoque, Sidney Herrell, Marcelo Guzman, Chad Risko, Doo Young Kim. Understanding the Selectivity of Nitrogen-Doped sp2/sp2 Hybrid Carbon Films for the Electrocatalytic Reduction of Carbon Dioxide.

Namal Wanninayake, Qianxiang Ai, Md Ariful Hoque, Marcelo Guzman, Chad Risko, Doo Young Kim. Heteroatom-doped carbon nano-onions for the Electrocatalytic Reduction of Carbon Dioxide.

Namal Wanninayake, Qianxiang Ai, Md Ariful Hoque, Marcelo Guzman, Chad Risko, Doo Young Kim. Effect of surface termination on diamond-based electrodes towards Electrocatalytic Reduction of Carbon Dioxide.

Syed Z. Islam, **Namal Wanninayake**, Allen Reed, Joseph Strzalka, Doo-Young Kim, and Stephen Rankin, Synergistic Effects of Graphene Quantum Dot Sensitization and Nitrogen Doping of Ordered Mesoporous TiO_2 Thin films for Water Splitting Photocatalysis.

J. G. Connell, M. Souri, **N. Wanninayake**, J. Johnson, J. Thompson, J. H. Gruenewald, J. W. Brill, J. Hwang, D. Y. Kim, and A. Seo, Hydrogen-plasma induced transparent conducting states in strongly-correlated titanates.

Syed Z. Islam, M. Arif Khan, **Namal Wanninayake**, Suraj Nagpure, Yuxin He, Joseph W. Strzalka, Doo-Young Kim, Barbara Knutson and Stephen E. Rankin, *In Situ* GISAXS Investigation of Low-Temperature Aging of Layer-By-Layer Thick Mesoporous Titania Films with Vertically Oriented 2D-HCP Nanopores.

PATENT APPLICATION

Syed Z. Islam, **Namal Wanninayake**, Doo-Young Kim, and Stephen Rankin, Nanoporous metal oxide photocatalysts combining graphene quantum dot sensitization and nonmetal doping (*Submitted to Office of Technology Commercialization on 01/18/2018*).

CONFERENCE PRESENTATIONS

Oral Presentations

Namal Wanninayake, Sidney Herrell, Ruixin Zhou, Ariful Hoque, Marcelo Guzman, Doo Young Kim. Nitrogen-Doped sp^2/sp^3 Hybrid Carbon Films for Electrocatalytic Reduction of Carbon Dioxide, 2017 Fall Materials Research Society Meeting and Exhibit, Hynes Convention Center, Boston, Massachusetts, November 30, 2017.

Syed Z. Islam, Allen Reed, Suraj Nagpure, **Namal Wanninayake**, James F. Browning, Doo Young Kim, and Stephen E. Rankin, Neutron Reflectometry Investigation of Hydrogen in Plasma Treated Hydrogen Doped Nanoporous TiO_2 Thin Films for Water Splitting Photocatalysis, AIChE 2016, San Francisco, CA, USA.

Syed Z. Islam, **Namal Wanninayake**, Allen D. Reed, Doo-Young Kim, and Stephen E. Rankin, Synergistic Effects of Graphene Quantum Dot Sensitization and Nitrogen Doping of Ordered Mesoporous TiO_2 Thin Films for Water Splitting Photocatalysis**, SPIE (**Solar Hydrogen and Nanotechnology XI), 2016, San Diego, California, USA.

Namal Wanninayake, Veranja Karunaratne, Nedra Karunaratne, Preparation of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) nanospheres for the sustained release of Folic Acid, Peradeniya University Research Sessions, Sri Lanka, 4th July 2013.

Poster Presentations

Namal Wanninayake, Syed Z. Islam, Allen Reed, Joseph Strzalka, Stephen E. Rankin * Doo Young Kim. Graphene Quantum Dots Immobilized Mesoporous N-TiO_2 Thin Films for Efficient Photocatalytic Water Oxidation, 2017 Fall Materials Research Society Meeting and Exhibit, Hynes Convention Center, Boston, Massachusetts, November 27, 2017.

Namal Wanninayake, Syed Z. Islam, Allen Reed, Stephen E. Rankin, and Doo Young Kim, Graphene Quantum Dot Immobilized Nanoporous N-TiO_2 Thin Films for Efficient Photocatalytic Water Splitting, Pittcon Conference and Expo 2016, Atlanta, GA, USA.

Namal Wanninayake, Syed Islam, Allen Reed, Doo-Young Kim, and Stephen Rankin, Synergistic Effects of Graphene Quantum Dot Sensitization and Nitrogen Doping of Ordered Mesoporous TiO_2 Thin Films for Water Splitting Photocatalysis, KY NSF EPSCoR Super Collider Graduate Student Conference 2016, Lexington, KY, USA.

Namal Wanninayake, Andrew Colburn, Minghui Gui, Dibakar Bhattacharyya, Doo young Kim Immobilization of Graphene Quantum Dots (GQDs) on the Surface of Metal Oxide Substrates or Polymeric Membranes, NAMS Conference 2015, Boston, MA, USA.

PROFESSIONAL AFFILIATIONS

The Electrochemical Society (ECS)
Vice President, ECS Kentucky Student Chapter (2018-2019)

Chemistry Graduate Student Association
University of Kentucky, **Treasurer** (2018-2019)

Materials Research Society (MRS)

North American Membrane Society (NAMS)

OUTREACH ACTIVITIES

April 21st, 2018	Volunteered for Expanding Your Horizons STEM conference for middle school girls.
Jan 31st, 2017	Volunteered for Crawford Middle School Science Night, Lexington KY.
Fall-2016, Fall-2017	Volunteered as a connection team member assisting with international incoming graduate students, Department of Chemistry, University of Kentucky.
Mar 25-26, 2017	Volunteered for graduate student recruitment activities, Department of Chemistry, University of Kentucky.
Oct 23, 2015	Volunteered for the demo show held by the Department of Chemistry, University of Kentucky.