Curriculum Vitae

Darshana Lakmal Weerawarne

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1. Higher Education

2017	PhD in Physics Binghamton University, State University of New York (SUNY), USA
2014	MS in Physics Binghamton University, State University of New York (SUNY), USA
2010	BSc (Hons) in Engineering Physics University of Colombo, Sri Lanka

2. Research Interest

- Printed flexible electronics - design, fabrication, and reliability testing
- Applied optics and optical metrology
- Experimental research on laser-matter interactions
- Numerical simulations on laser pulse propagation, laser assisted heating, and thermal effects

3. Research Experience

2017 - 2018 (1.5 yrs) Postdoctoral research, Center for Advanced Microelectronics Manufacturing (CAMM) of Binghamton University

Key collaborators – NextFlex, General Electric, Lockheed Martin

- Substrate and conductive material characterization for flexible electronics
- Design, fabrication, and testing of flexible electronics
- Laser assisted thermal processing of nanoparticle inks
- Optical metrology to assess reliability of printed electronics

2013 - 2017 (4 yrs) Graduate research, Binghamton University

Key collaborators – MIT, Cornell University, Columbia University

Nonlinear optics and femtosecond (fs) laser spectroscopy

- Low-order time-resolved harmonic generation
- Mathematical simulations of ultrashort laser pulse propagation (C++)

Digital inline holography

- Optical imaging of phase/amplitude variations
- Mathematical reconstruction of phase/amplitude (C++, Matlab)

Femtosecond/nanosecond laser sintering of nanoparticle inks

- Fabrication of smart energy and electronics sensors
- Mathematical simulations of laser pulse heating (C++, Mathematica, Matlab)
- Mathematical simulations of electric filed distribution around nanoparticles (MEEP, MNPBEM)

System automation

- Pump-probe system automation
- Digital inline holography system automation

2011 - 2012 (1 yr) Wireless sensor network research, University of Colombo School of Computing, Sri Lanka

Wireless Ad-Hoc and Sensor Networks communication

Smart home systems and automation

2008 - 2010 (2 yrs) Undergraduate research, University of Colombo, Sri Lanka

Lightning electric field detection antenna system implementation

4. Technical Skills

Printed flexible electronics
- Aerosol Jet Printing (AJP), Precision dispensing, Screen printing
- Reliability testing – Instron, MTS
- AutoCAD, Mastercam layout design

Optical science
- High power laser operation and safety
- Femtosecond time resolved spectroscopy
- Digital inline holography and imaging
- Laser sintering and micromachining
- Optical metrology and image processing

Mathematical modelling and simulations
- Ultrashort laser pulse propagation and nonlinear effects
- Laser assisted heating and thermal effects

Electronic circuit design, simulation, and fabrication
- Software – Simulink, Orcad, PSPICE

System automation, control, and software development
- Communication protocols – SSP (SPI, I2C), USART
- Motion controlling – FTDI, SPiiPlus, APT SDK, Kinesis SDK
- Image acquisition – FlyCapture SDK, Spinnaker SDK, Pylon

Wireless sensor network development and programming
- Sensor platforms – MSB430, Micaz, Tmote Sky

Microcontroller/microprocessor programming and programmable logic
- Microcontrollers – PIC, Atmel, AtMega, AVR, MSP, Arduino

Scientific computing
- C/C++, Python, Matlab, Mathematica, Labview, Octave
- Octopus (TDFT), MEEP (FDTD), MNPBEM (BEM)

Visual Programming
- Visual studio / C++

High performance computing
- Parallel computing: Pthreads, MPI, GPU

Computer literacy
- Operating systems – Windows, Linux
- Word processing – MS Office, Open Office, LaTeX

5. Teaching Experience

2012 - 2017 (5 yrs) Graduate Teaching Assistant,
General Physics, Computational Physics (using Mathematica),
State University of New York, Binghamton, New York, USA.

2010 - 2012 (2 yrs) Visiting Lecturer,
Analogue and Digital Electronics I, II,
For BSc in Computer Science Degree,
University of Colombo School of Computing, Sri Lanka.

2011 - 2012 (1 yr) Teaching Assistant,
Wireless Ad-hoc and Sensor Networks,
High Performance Computing,
For MSc and BSc in Computer Science Degrees,
University of Colombo School of Computing, Sri Lanka.

2010 Teaching Assistant,
Electronic Instrumentation Laboratory,
Computational and Simulation Laboratory,
For MSc in Applied Electronics,
Department of Physics, University of Colombo, Sri Lanka.

6. Professional Service

2015 - 2018	Member of Physics Outreach Program, Binghamton University
2013 - 2016	Graduate volunteer, Broome County Promise Zone
2011 - 2012	Junior Technical Consultant, National Peoples' Registry project, Defence Ministry, Sri Lanka
2012	Junior Network Security Consultant, Network and Security audit, Cooperate Insurance, Sri Lanka
2011	Member of the Logistics Committee, ICTer 2011, Colombo, Sri Lanka

7. List of Publications

Darshana L Weerawarne
Google scholar - https://scholar.google.com/citations?user=3NVkz0YAAAAJ&hl=en

	TITLE	CITED BY	YEAR
1	In Situ Functional Monitoring of Aerosol Jet-Printed Electronic Devices Using a Combined Sparse Representation-Based Classification (SRC) Approach R Salary, JP Lombardi, **DL Weerawarne**, MS Tootooni, PK Rao, MD Poliks ASME 2018 13th International Manufacturing Science and Engineering Conference		2018
2	In-Situ Image-Based Monitoring and Closed-Loop Control of Aerosol Jet Printing JP Lombardi, R Salary, **DL Weerawarne**, PK Rao, MD Poliks ASME 2018 13th International Manufacturing Science and Engineering Conference		2018
3	Isothermal Fatigue of Interconnections in Flexible Hybrid Electronics Based Human Performance Monitors RS Sivasubramony, N Adams, M Alhendi, GS Khinda, MZ Kokash, JP Lombardi, A Raj, S Thekkut, **DL Weerawarne**, M Yadav, AV Zachariah, NC Stoffel, DM Shaddock, L Yin, MD Poliks, P Borgesen 2018 IEEE 68th Electronic Components and Technology Conference (ECTC), 896-903		2018
4	Effects of higher-order nonlinear processes on harmonic-generation phase matching RI Grynko, **DL Weerawarne**, B Shim Physical Review A 96 (1), 013816	4	2017
5	Study of Nonlinear Propagation of Ultrashort Laser Pulses and Its Application to Harmonic Generation **DL Weerawarne** State University of New York at Binghamton		2017
6	Multi-filament Inhibition and Resulting Solitary Wave Formation in Condensed Matter RI Grynko, **DL Weerawarne**, X Gao, H Liang, HJ Meyer, KH Hong, ...		2016

	TITLE	CITED BY	YEAR
	Frontiers in Optics, FF2C. 1		
7	Inhibition of multi-filamentation of high-power laser beams RI Grynko, **DL Weerawarne**, X Gao, H Liang, HJ Meyer, KH Hong, ... Optics letters 41 (17), 4064-4067	2	2016
8	Understanding low-temperature sintering and adhesion properties of metal nanoparticles printed sensor devices J Luo, W Zhao, S Shan, J Lombardi, **D Weerawarne**, T Rovere, N Kang, Z Skeete, Y Xu, A Vargas, B Shim, B Hsiao, M Poliks, C-J Zhong Abstracts of Papers of The American Chemical Society 252		2016
9	Mid-infrared laser filaments in air at a kilohertz repetition rate H Liang, **DL Weerawarne**, P Krogen, RI Grynko, CJ Lai, B Shim, ... Optica 3 (7), 678-681	14	2016
10	Mid-IR Laser Filamentation in air at a kHz Repetition Rate HK Liang, P Krogen, **D Weerawarne**, CJ Lai, R Grynko, B Shim, F Kärtner, ... Mid-Infrared Coherent Sources, MT2C. 5	1	2016
11	Erratum: Strong optical nonlinearity of CVD-grown monolayer as probed by wavelength-dependent second-harmonic generation [Phys. Rev. B **90**, 121409(R … DJ Clark, V Senthilkumar, CT Le, **DL Weerawarne**, B Shim, JI Jang, ... Physical Review B 92 (15), 159901	2	2015
12	Nanoalloy printed and pulse-laser sintered flexible sensor devices with enhanced stability and materials compatibility W Zhao, T Rovere, **D Weerawarne**, G Osterhoudt, N Kang, P Joseph, ... ACS nano 9 (6), 6168-6177	23	2015
13	Significant enhancement of third-and fifth-harmonic generation in air via two-color, time-resolved methods **D Weerawarne**, R Grynko, HJ Meyer, B Shim CLEO: QELS_Fundamental Science, FM3D. 4		2015
14	Mid-IR filamentation in dielectrics: 3-Octave-spanning supercontinuum generation and sub-2-cycle self-compression HK Liang, PR Krogen, R Grynko, O Novak, C-LL	1	2015

	TITLE	CITED BY	YEAR
	Chang, GJ Stein, **D Weerawarne**, B Shim, F Kaernter, K-H Hong CLEO: QELS_Fundamental Science, FTu4D. 2		
15	Three-octave-spanning supercontinuum generation and sub-two-cycle self-compression of mid-infrared filaments in dielectrics H Liang, P Krogen, R Grynko, O Novak, C-L Chang, GJ Stein, **D Weerawarne**, B Shim, FX Kärtner, K-H Hong Optics letters 40 (6), 1069-1072	69	2015
16	Higher-order nonlinearities revisited and their effect on harmonic generation **DL Weerawarne**, X Gao, AL Gaeta, B Shim Physical review letters 114 (9), 093901	21	2015
17	3-octave supercontinuum generation and sub-2-cycle self-compression of mid-IR filaments in dielectrics H Liang, PR Krogen, R Grynko, O Novak, C-LL Chang, GJ Stein, **D Weerawarne**, B Shim, FX Kärtner, K-H Hong Advanced Solid State Lasers, ATu5A. 4	2	2014
18	Strong optical nonlinearity of CVD-grown MoS_2 monolayer as probed by wavelength-dependent second-harmonic generation DJ Clark, V Senthilkumar, CT Le, **DL Weerawarne**, B Shim, JI Jang, ... Physical Review B 90 (12), 121409	44	2014
19	Test of higher-order nonlinearity via low-order harmonic generation revisited **DL Weerawarne**, X Gao, AL Gaeta, B Shim Lasers and Electro-Optics (CLEO), 2014 Conference on, 1-2		2014
20	TikiriPower-Using TikiriDB abstraction on Smart Home systems **L Weerawarne**, A Sayakkara, D Fernando, C Suduwella, K De Zoysa Advances in ICT for Emerging Regions (ICTer), 2012 International Conference …		2012