Damith E.W Patabadige

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Education

Kansas State University — **Manhattan, KS**
Ph.D., Analytical Chemistry — May 2012- March 2017

University of Colombo — **Sri Lanka**
B.S. in Chemistry (Honors) — May 2002- August 2006
Minor- Applied Mathematics, Computer and Statistics

Skills and Knowledge Areas

- Nearly 8 years of expertise in teaching laboratory courses, conducting chemistry workshops and help room sessions in multiple universities.
- Experienced in conducting lectures, preparing exams and grading reports/assignments.
- Followed Chemical Microscopy, Practicum in Teaching Chemistry, Nano Materials, Inorganic Chemistry, Theoretical Chemistry, Analytical Separation Techniques and NMR Laboratory graduate level courses.
- Followed advance Organic Chemistry, Physical Organic Chemistry, Bio Organic Chemistry, Polymer and Industrial Chemistry, Analytical Chemistry, Spectroscopy, Biochemistry and Physical Chemistry undergraduate level courses.
- Nearly 5 years of hands-on expertise in Microfluidic Manipulation, Capillary Electrophoresis, Gel Electrophoresis, Single Cell Analysis, Softlithography, Photolithography and Fiber Optics Integration
- Experienced in analyzing organic molecules and characterizing peptides using 1D and 2D NMR
- Experienced in HPLC, GC-MS, GC and atomic absorption spectroscopy (AAS), UV/Visible Spectroscopy, Fluorescence Spectroscopy, Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM)
- Experienced in working in a team environment and collaborating with interdisciplinary research groups
- Expert in writing protocols, technical reports, standard operation procedure and submission of documents
- Presented in regional, national and international conferences
- Successfully working on diverse projects, supervised and trained summer REU students, undergraduate students and graduate students simultaneously.

Professional Experience

Oak Ridge National Laboratory — **Oak Ridge, TN**
Post-Doctoral Research Associate — April 2017- present

- Designing and fabricating microfluidic and nanofluidic platforms by using clean room protocols
- Integrating nanomembranes in to microfluidic layers to monitor bacterial metabolic products
- Developing highly sensitive detection techniques to monitor metabolites in attomoler concentrations and understanding signaling pathways of bacterial cells

Teaching Experience

Kansas State University — **Manhattan, KS**
Graduate Teaching Assistant, Chemistry Department — May 2012- March 2017

- Conducted analytical chemistry laboratory experiments (CHM 371 and CHM 250) for chemistry major students
- Conducted basic chemistry laboratory experiments (CHM 210 and CHM 230) for junior and sophomore students
- Conducted help room sessions for chemistry major students
- Prepared laboratory exams for junior and sophomore students
- Proctored exams for chemistry major students

Open University **Sri Lanka**
Teaching Assistant, Chemistry Department September 2007- May 2009

- Conducted Environmental Chemistry and General Chemistry laboratory experiments for chemistry major students
- Taught compulsory mathematics course for chemistry major students
- Proctored exams for chemistry major students, prepared and graded laboratory exams for senior students
- Conducted chemistry workshops and mathematic workshops for chemistry major students
- Translated "Introduction to Thermodynamics" book under supervision of University Distinguish Professor

University of Colombo **Sri Lanka**
Teaching Assistant, Chemistry Department September 2006- August 2007

- Designed and conducted Organic Chemistry laboratory experiments for chemistry major students
- Conducted help room sessions for chemistry and pharmacy honor students
- Graded assignments and lab reports
- Proctored exams for chemistry major students

Research Experience

Kansas State University **Manhattan, KS**
Graduate Research Assistant, Chemistry Department May 2012- April 2017

- Designed, characterized and optimized microfluidic multilayer devices for high throughput and automated fluid/sample manipulation and single cell analysis
- Designed and synthesized cell penetrating peptides substrates to analyze intercellular protein kinases and characterized them using MS and capillary electrophoresis techniques.
- Studied inhibition effects of PKA, PKB, PKC and ABL protein kinases using cell penetrating peptide substrates
- Analyzed mitochondrial DNA in T-lymphocytes using microchip electrophoresis (ME) coupled laser induced fluorescence detection (LIF)
- Developed microfluidic platform for electrokinetic driven single cell manipulation, automated cell lysing, analyte injection and real time separation using low DC voltage.
- Fabricated and integrated microband miniaturized electrodes for analyzing reactive nitrogen and oxygen species in single T-lymphocytes
- Integrated optical fibers with microfluidic platforms for multipoint detection and investigated separation characteristics of phosphorylated/non-phosphorylated peptide substrates of PKB and analyzed signal transduction pathways
- Integrated optical fibers with microfluidic platforms for size and velocity discrimination of particles and single cells
- Purified serine proteases and serine protease inhibitors from *A. gambiae* hemolymph using immunoaffinity chromatography

- Wrote standard operating procedures (SOP) and safety protocols for using instruments in the research lab
- Served as the safety officer and was responsible for maintaining a safe environment in the laboratory

University of Colombo **Sri Lanka**
Research Assistant, Chemistry Department May 2002- August 2006

- Analyzed trace metals in polluted water samples in city area using AAS
- Analyzed nitrate and nitrite present in polluted water samples using Cd reduction columns
- Synthesized hydroxamic acids and examined quenching effects of metal-hydroxamic acid complexes

Selected Publications

- Micro total analysis systems: fundamental advances and applications. **DEW Patabadige**, S Jia, J Sibbitts, J Sadeghi, K Sellens, CT Culbertson. *Anal. Chem* . 2016. *88* (1), 320-338.
- High throughput microfluidic device for single cell analysis using multiple integrated soft-lithographic pumps. **DEW Patabadige**, T Mickleburgh, L Ferris, G Brummer, AH Culbertson, CT Culbertson. *Electrophoresis.*2016. 37 (10), 1337-1344.
- Integrating optical fiber bridges in microfluidic devices to create multiple excitation/detection points for single cell analysis. **DEW Patabadige**, J Sadeghi, M Kalubowilage, SH Bossmann, AH Culbertson, H Latifi, CT Culbertson. *Anal. Chem.* 2016. *88* (20), 9920-9925.
- Integration of a multimode optical fiber for single particle/cell detection at multiple points on a microfluidic device with applications to particle/cell counting, velocimetry, size discrimination and the analysis of single cell lysate Injections. J Sadeghi , **DEW Patabadige**, AH Culbertson, H Latifi, CT Culbetson. *Lab Chip*. 2017. *17*(1), 145-155.
- Recent advances in single cell analysis using microfluidic platforms. Lab Chip. 2016. (Invited review; In preparation)

Selected Presentations

- Integration of out-of-plane optical fiber for multipoint detection in microfluidic platforms and using fiber tunneling mode for particle/cell counting, velocimetry and size discrimination., American chemical society, 253rd national conference, San Francisco, CA. 2nd of April 2017. (Oral)
- Integrating out-of-plane optical fiber bridges in microfluidic platforms to create multiple excitation/detection spots for single cell analysis, American chemical society, Midwest conference, Manhattan, KS. 21st of October 2016. (Oral)
- High throughput single cell analysis using multilayer microfluidic devices, American chemical society, 251st national conference, San Diego, CA. 17th of March 2016. (Oral presentation)
- High-throughput microfluidic chip for single cell analysis, American chemical society, Midwest conference, St. Joseph, MO. 22th of October 2015. (Poster presentation)
- Designing and characterization of high throughput multilayer micro fluidic device for single cell analysis, American chemical society, 249th national conference national conference, Denver, CO. 23rd of March 2015. (Oral presentation)
- Designing and characterization of multilayer microchip for single cell analysis, American chemical society, Midwest conference, Columbia, MO. 14th of November 2014. (Oral presentation)

- Designing and Characterization of Multilayer Microchip for Single Cell Analysis, Silicon Prairie International Microfluidics Symposium, Lawrence, KS. 1st of November 2014. (Poster presentation)

Awards and Recognitions

- Meloan award in 2016 from Department of Chemistry, Kansas State University for outstanding graduate research in Analytical Chemistry.
- Recognition of outstanding presentation in K-State research forum in 2015 from Kansas State University.
- Graduate Student Summer Stipend 2014 from *Johnson Center for Basic Cancer Research,* Kansas State University.

Professional Memberships

- Phi Lamda Upsilon Member 2012 – present
- American Chemical Society member, 2015-Present