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**EDUCATION:**

August 2009-May 2015

Ph.D. in Chemistry

Department of Chemistry, Wayne State University, Detroit, MI, USA.

Advisor: Prof. Colin F. Poole.

August 2005-August 2008

M.Sc. in Chemistry

Department of Chemistry, Wayne State University, Detroit, MI, USA.

1999-2003

B.Sc. (Chemistry Special) Honors

University of Peradeniya

Secondary School Education

Girls' High School, Kandy

Primary School Education

Sujatha Vidyalaya, Kegalle

## **Ph.D. DISSERTATION:**

### **1. Evaluation of Potential Solvent Systems for Descriptor Determinations**

In these studies, the models for direct estimation of environmental properties were developed. In order to enhance the selectivity space of currently available models, ethanolamine and triethylamine-based systems were characterized. Quantitative structure property relationships with high statistical quality were constructed to characterize totally organic biphasic partition systems of different polarity. The studies conducted in this study will facilitate the determination of descriptors of environmentally important organic compounds. Gas chromatography techniques were used for this research project.

### **2. Determination of Descriptors for Polycyclic Aromatic Hydrocarbons and Related Compounds**

Descriptor values for polycyclic aromatic hydrocarbons were determined. The determined descriptor values were validated using theoretical models, standard environmental models, and by comparison with experimentally determined solute property values. Research work completed in this study would enable accurate measurement of solute properties for the estimation of environmental properties. Gas chromatography and liquid chromatography techniques were used in these studies.

### **3. Ruthenium Substrate-Catalyzed Growth of Nickel Nitride Thin Films by Atomic Layer Deposition (ALD)**

A new substrate-dependent catalytic thermal ALD process was developed to address the low reactivity of precursors in atomic layer deposition processes. The developed process can be used to obtain smooth, high purity thin-films at low deposition temperatures, and also for the deposition of materials which were found challenging so far using thermal and energy enhanced ALD methods. The developed process can be conveniently used for the commercial production of thin film materials. Thin film depositions were carried out using R-75BE ALD reactor. To characterize films, X-ray diffraction, X-ray photoelectron spectroscopy, scanning electron microscopy, and atomic force microscopy techniques were used.

## **PUBLICATIONS:**

Ariyasena, T. C.; Poole, C. F. "Determination of Descriptors for Polycyclic Aromatic Hydrocarbons and Related Compounds by Chromatographic Methods and Liquid-Liquid Partition in Totally Organic Biphasic Systems." *J. Chromatogr. A* **2014**, *1361*, 240-254.

Ariyasena, T. C.; Poole, C. F. "Evaluation of Triethylamine as a Counter Solvent in Totally Organic Biphasic Liquid-Liquid Partition Systems." *Chromatographia* **2013**, *76*, 1031-1039.

Ariyasena, T. C.; Poole, C. F. "Models for Liquid-Liquid Partition in the System Ethanolamine-Organic Solvent and Their Use for Estimating Descriptors for Organic Compounds". *Chromatographia* **2013**, *76*, 157-164.

Poole, C. F.; Ariyasena, T. C.; Lenca, N. "Estimation of the Environmental Properties of Compounds from Chromatographic Measurements and the Solvation Parameter Model." *J. Chromatogr. A* **2013**, *1317*, 85-104.

Poole, C. F.; Karunasekara, T.; Ariyasena, T. C. "Totally Organic Biphasic Solvent Systems for Extraction and Descriptor Determinations." *J. Sep. Sci.* **2013**, *36*, 96-109.

Knisely, T. J.; Ariyasena, T. C.; Sajavaara, T.; Saly, M. J.; Winter, C. H. "Low Temperature Growth of High Purity, Low Resistivity Copper Films by Atomic Layer Deposition." *Chem. Mater.* **2011**, *33*, 4417-4419.

#### **PATENTS:**

Winter, C. H.; Knisely, T. J.; Ariyasena, T. Atomic Layer Deposition of Transition Metal Thin Films. WO 2013006242 A1, January 10, 2013. US Patent.

#### **SELECTED PRESENTATIONS:**

Ariyasena, T. C.; Poole, C. F. "Evaluation of Ethanolamine and Triethylamine as Counter Solvents in Totally Organic Biphasic Liquid-Liquid Partition Systems and Their Use for Estimating Descriptors for Organic Compounds" ANACHEM/SAS Symposium, Livonia, Michigan. November 7, 2013.

Ariyasena, T. C.; Winter, C. H. "Synthesis and Characterization of First Row Transition Metal Complexes Containing Beta-Diketiminato Ligands" Graduate Research Symposium, Department of Chemistry, Wayne State University, October, 2009.

#### **AWARDS:**

Departmental citation for excellence in teaching service, Department of Chemistry, Wayne State University, 2008.

## **PROFESSIONAL EXPERIENCE:**

- June 2016-March 2017 Senior Lecturer Gr II, Uva-Wellassa University, Badulla, Sri Lanka
- From January 25, 2016 Visiting Lecturer, Post Graduate Institute of Science, University of Peradeniya.
- M.Sc. In Analytical Chemistry Courses
- CH 526: Advanced Analytical Chemistry Laboratory II-Instrumental Methods
- CH 516: Analytical Separations, 10 lectures
- 2016 June-September Visiting Lecturer, Sabaragamuwa University of Sri Lanka
- 2015 June-September Visiting Lecturer, Sabaragamuwa University of Sri Lanka
- Industrial Chemistry and Technology II, PST 41201,  
B.Sc. Special Degree in Chemical Technology, Year IV, Academic  
Year 2013/2014- Semester 1
- 2005-2008, 2009-2011 Teaching Assistant, Department of Chemistry, Wayne State University
- Teaching undergraduate quiz, and lab classes, grading exams.
- 2011-2012 Graduate Research Assistant
- 2011, 2012 (Summer Terms ) Instructional Assistant
- 2003-2004 Temporary Assistant Lecturer and Temporary Demonstrator,  
Department of Chemistry, University of Peradeniya.

## **INDUSTRIAL TRAINING:**

16/04/2002-25/05/2002 Undergraduate Trainee: Supercritical Fluid Extraction Plant, Ratmalana.

## **PROFESSIONAL AFFILIATIONS:**

Golden Key International Honor Society: Top 15% of students based on graduate course work.

### **COMPUTER LITERACY:**

Studied Computer Science as the subsidiary subject for the B.Sc. degree earned at University of Peradeniya.

### **EXTRA CURRICULAR ACTIVITIES:**

Awarded the certificate for teaching development by Wayne State University, USA in 2005.

Obtained a complete score (60 out of 60) for SPEAK test conducted by Department of English, Wayne State University in 2005.

Worked as an Instructor in English in the English Language Teaching Unit, University of Peradeniya from 21/3/2004-31/07/2005.

Passed the 'Test of English as a Foreign Language' in 2004.

Passed the Graduate Record Examination in 2004.

Passed the 'Certificate Test in English' conducted by English language Teaching Unit, University of Peradeniya, in 2000 and 2001.

Obtained the E.D.C.S scholarship for university students in 1999.

Passed the Test of English for Communication conducted by University of Warwick, UK. Level 1-Distiction, Level 2-Distinction, Level 3-Credit.

Awarded the certificate for good performance in GCE (O/L) examination by Ministry of Education, Central Province in 1993.

Awarded the certificates for good work by Girls' High School, Kandy in 1988, 1990, and 1991.

Was a school prefect in 1988.