

Brylee David B. Tiu

Dept. of Macromolecular Science & Engineering
Case Western Reserve University
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EDUCATION

Case Western Reserve University Cleveland, OH
PhD Candidate, Macromolecular Science and Engineering 2012-2015

University of the Philippines Diliman Quezon City, Philippines
BS, magna cum laude, Chemical Engineering April 2010

RESEARCH EXPERIENCE

Case Western Reserve University Cleveland, OH
Research Assistant 2012-Present

- Developed nanostructured thin polymeric coatings for different applications such as sensing, oxygen barrier, anti-bacterial, anti-corrosion and scale-inhibiting properties.
- Fabricated multifunctional smart nanofiber systems with bactericidal, anti-wetting and chromic properties.
- Reviewed several submitted articles for publication in peer-reviewed scientific journals.
- Mentored undergraduates, high school and visiting graduate students in polymer research.

University of Houston – Main Campus Houston, TX
Research Assistant 2010-2012

- Developed electropolymerized molecularly imprinted polymer film sensors for drugs.
- Worked on antimicrobial polymeric nanofibers.
- Mentored several biomedical engineering and chemistry undergraduates in polymer research.

PROFESSIONAL EXPERIENCE

University of Houston – Main Campus Houston, TX
Teaching Assistant 2010-2012

- Prepared pre-laboratory discussions and facilitated fundamental organic chemistry experiments.
- Supervised large classroom examinations and graded lab reports and major organic chemistry examinations.

Procter & Gamble Philippines Makati City, Manila, Philippines
Product Supply Intern April-June 2009

- Programmed a real-time tracking system of finished good scraps.
- Installed a reporting system template that monitors finished good scrap data and analyzes the trends and top most reason codes for scrapping.
- Designed a program that readily prepares the reworking schedule of slightly damaged finished goods.

LEADERSHIP EXPERIENCE

Case Western Reserve University Graduate Student Senate (GSS) February-May 2015
Secretary

- Managed internal communication within the senate and organized committee records particularly GSS membership, as well as executive committee and general assembly minutes.
- Handled information updates on on-going/passed resolutions and upcoming events to all graduate student departments in CWRU.

School of Engineering Executive June 2014-May 2015

- Represented the School of Engineering graduate students in the GSS executive board and monthly conventions.
- Supervised the department graduate student senators in their respective projects.

Graduate Student Senator for Macromolecular Science and Engineering August 2013-May 2014

- Headed the logistics operations for the Polymer Initiative of the Northeast Ohio (PiNO) Conference 2014
- Represented the Dept. of Macromolecular Science and Engineering in the monthly convention of the GSS

PEER-REVIEWED PUBLICATIONS

- **Tiu, B. D. B.**, & Advincula, R. C. (2015). Polymeric Corrosion Inhibitors for the Oil & Gas Industry: Design Principles and Mechanism. *Reactive and Functional Polymers*.
- **Tiu, B. D. B.**, Pernites, R. B., Foster, E. L., & Advincula, R. C. (2015). Conducting polymer–gold co-patterned surfaces via nanosphere lithography. *Journal of colloid and interface science*, 459, 86-96.
- **Tiu, B. D. B.**, & Advincula, R. C. (2015). Plasmonics and templated systems for bioapplications. *Rendiconti Lincei*, 26(2), 143-160.
- Pernites, R. B., Venkata, S. K., **Tiu, B. D. B.**, Yago, A. C. C. and Advincula, R. C. (2012), Nanostructured, Molecularly Imprinted, and Template-Patterned Polythiophenes for Chiral Sensing and Differentiation. *Small*, 8: 1669–1674. doi: 10.1002/smll.201102331
- Park, J. Y.; Pernites, R.; Estillore, N.; Hyakutake, T.; Ponnappati, R.; **Tiu, B. D. B.**; Nishide, H.; Advincula, R. C. (2011), Capsulation of carbon nanotubes on top of colloiddally templated and electropolymerized polythiophene arrays. *Chem Commun (Camb)* 47: 8871-8873. Doi: 10.1039/C1CC12033F

BOOK CHAPTER

- De Leon, A., **Tiu, B. D. B.**, Mangadlao, J., Pangilinan, K., Cao, P. and Advincula, R. (2014) Applications of Fourier Transform Infrared (FTIR) Imaging, in Handbook of Spectroscopy: Second, Enlarged Edition (eds G. Gauglitz and D. S. Moore), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany. doi: 10.1002/9783527654703.ch31

CONFERENCE PROCEEDINGS

- de Guzman, R. C., De Leon, A. C. C., **Tiu, B. D. B.**, Espartero, J. C., & Baltazar, A. D. (2015). Optimization of Silica Chemical Inhibition Using Phosphinocarboxylic Acid Copolymer through Nanocolloidal Particle Size Measurement of Simulated Geothermal Fluid. Paper presented at the World Geothermal Congress 2015 Optimization, 19, 25.
- de Guzman, R. C., De Leon, A. C. C., **Tiu, B. D. B.**, Baltazar Jr, A. D., & Rigoberto, C. (2015, 19-25 April). Characterization of Nanocolloidal Silica Formation of Untreated and Treated Simulated Geothermal Brine through Various Particle Size and Zeta Potential Measurement Techniques. Paper presented at the World Geothermal Congress 2015.
- de Luna, M. D. G., Cariño, R. K. P., **Tiu, B. D. B.**, Tolod, K. R., Herrera, M. U. (2012), Synthesis and Characterization of Cellulose Acetate – Glucose Oxidase Nanofibers for Biosensor Applications. 14th Asia Pacific Confederation of Chemical Engineering Congress

REVIEWER FOR: Macromolecular Research, Reactive and Functional Polymers

SESSION PRESIDER:

- General Papers. New concepts in Polymeric Materials (Morning Session), 246th ACS National Meeting & Exposition “Chemistry in Motion,” Indianapolis, IN, Sept 8-12, 2013

ORAL PRESENTATIONS

- **246th ACS National Meeting & Exposition “Chemistry in Motion,” Indianapolis, IN, Sept 8-12, 2013**
Topic: Temperature-switchable Wettability of PS-*g*-PNIPAM Fiber Mats
- **245th ACS National Meeting & Exposition “Chemistry of Energy & Food,” New Orleans, LA, April 7-11, 2013**
Topic: Formation of Well-Ordered Gold Nanoclusters via Reverse Colloidal Templating
- **10th National Graduate Research Polymer Conference, Dept. of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH May 23-24, 2012**
Topic: Molecular Imprinted and Template Patterned Polyterthiophene Films for Chiral Sensing

SELECTED POSTER PRESENTATIONS

- **Macromolecular Science and Engineering 37th Annual Symposium, Dept. of Macromolecular Science and Engineering, University of Michigan, Ann Arbor, MI October 24, 2013**
Topic: Redox-Responsive Chromism and Wetting Properties of PVK Nanofibers
Winner, Best Invited Poster in Polymer Engineering
- **246th ACS National Meeting & Exposition “Chemistry in Motion,” Indianapolis, IN, Sept 8-12, 2013**
Topics:
 1. PS/MWNT Nanofiber-coated Gas Barrier Films with Superhydrophobic and Antibacterial Properties
 2. Redox-Responsive Chromism and Wetting Properties of PVK Nanofibers
- **245th ACS National Meeting & Exposition “Chemistry of Energy & Food,” New Orleans, LA, April 7-11, 2013**
Topic: Poly (vinyl alcohol)-Graphene Oxide Nanofibers for Antibacterial Applications
- **14th Asia Pacific Confederation of Chemical Engineering (APCChE 2012), Singapore**

Topic: Synthesis and Characterization of Cellulose Acetate-Glucose Oxidase Nanofibers for Biosensing Applications

- **NACE International Corrosion Conference & Expo, Houston, TX, March 13-17, 2011**

Topic: Self-cleaning Superhydrophobic Polymer Coatings for Separation of Oil-Water Mixtures

- **Society of Plastic Engineers 23rd International Polyolefins Conference, Houston, TX, February 27-March 2, 2011**

Topic: Aspartame Quartz Crystal Microbalance Sensor Using Electropolymerized Molecularly Imprinted Polymer Films of Terthiophene Monomer

AWARDS

- **Graduate Student Appreciation Award**, School of Graduate Studies, Case Western Reserve University, April 2015.
- **Best Invited Poster in Polymer Engineering**, Macromolecular Science and Engineering 37th Annual Symposium, Dept. of Macromolecular Science and Engineering, University of Michigan, Oct. 2013.
- **Rebisco Leadership Awardee**, Department of Chemical Engineering, University of the Philippines Diliman, 2010.
- **Outstanding Scholar**, Phi Kappa Phi Honor Society, University of the Philippines Diliman Chapter, 2010.
- **One of 7 Most Promising Engineering Students**, UP Beta Epsilon Fraternity, College of Engineering, University of the Philippines Diliman.
- **Shell Petroleum Corporation Scholar**, Pilipinas Shell Refinery, 2001-2010.

PROFESSIONAL SOCIETY MEMBERSHIPS

American Chemical Society Polymer Chemistry (POLY) Division, American Chemical Society, Polymeric Materials: Science and Engineering (PMSE) Division, Society of Plastic Engineers, Phi Kappa Phi Honor Society, UP Chemical Engineering Society (2007-2010), Philippine Institute of Chemical Engineers-Junior Chapter Luzon (2007-2010), Philippine Association of Chemistry Students (2007-2010)

SKILLS

- Adsorption Measurements: Quartz crystal microbalance w/ dissipation (QCM-D), electrochemical quartz crystal microbalance w/ dissipation (EC-QCM-D), surface plasmon resonance, electrochemical surface plasmon resonance (EC-SPR)
- Electrochemical Measurements:
 - Cyclic voltammetry
 - Chronoamperometry
 - Electrochemical Impedance Spectroscopy
- Corrosion Testing
 - Open circuit potential measurements
 - Electrochemical Impedance Spectroscopy
 - Potentiodynamic Polarization Scans
 - Weight loss measurements
- Electrospinning
- Paint Formulation (Corrosion Testing)
- Polymer thin film fabrication
 - Electrochemical polymerization (potentiostatic and potentiodynamic methods)
 - Layer-by-layer deposition
 - Dip coating
 - Spin coating
 - Langmuir-Blodgett deposition
 - Self-assembled monolayers
- Polymer Processing
 - Compounding via twin-screw extruder
 - Melt press
- Polymer characterization
 - Microscopy: AFM (tapping, contact, and conducting AFM modes), scanning electron microscopy, transmission electron microscopy, optical microscopy
 - Spectroscopy: x-ray photoelectron spectroscopy, infrared spectroscopy, UV-Vis absorption and fluorescence spectroscopy, UV-vis absorption spectroscopy, fluorescence spectroscopy
 - Thermal analyses: thermogravimetric analysis, differential scanning calorimetry, dynamic mechanical analysis
 - Other surface Analysis: ellipsometry, profilometry, water contact angle measurements