

# TUHIN PODDAR

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<b>EDUCATION</b>	<i>Doctor of Philosophy - Chemical Engineering</i>	July 2020
	University of Waterloo, ON, Canada	GPA: 86/100
	<i>Master of Science - Chemical Engineering</i>	December 2016
	The Petroleum Institute, Abu Dhabi, UAE	GPA: 3.64/4.00
	<i>Bachelor of Science - Chemical Engineering</i>	May 2013
	Purdue University, West Lafayette, IN, USA	
	<i>GCE A-Levels - Physics, Chemistry, Mathematics, Economics</i>	December 2008
	Innova Junior College, Singapore	

**TECHNOLOGY SKILLS**    *Mathematical Modeling:* GAMS, MATLAB.  
*Process Simulation:* AspenHYSYS, AspenPlus, ProMax.  
*Programming Languages:* Python, R, Javascript, C.  
*Document Writing Software:* L<sup>A</sup>T<sub>E</sub>X, Microsoft Office.

<b>RESEARCH EXPERIENCE</b>	<i>Graduate Research Assistant</i>	January 2017 - Present
	University of Waterloo, ON, Canada	
	<ul style="list-style-type: none"><li>• Working under the supervision of Dr. Peter L. Douglas and Dr. Ali Elkamel on the design and operation of an integrated energy system using mathematical modeling, optimization and data analytics.</li><li>• Project involves exploring future sustainable energy systems that incorporate renewable energy sources and operate in a flexible manner with carbon capture technologies and energy storage.</li><li>• It is expected that the model will help provide key operational features needed to maximize the utilization of intermittent renewable energy sources (sun and wind) while ensuring that power demand is always met and cost of operating the energy system is minimized.</li><li>• Project incorporates stochastic parameters and utilizes big data tools to solve multi-period models for energy system design arising from future predictions and forecasts.</li></ul>	
	<i>Graduate Research Assistant</i>	July 2015 - December 2016
	The Petroleum Institute, Abu Dhabi, UAE	
	<ul style="list-style-type: none"><li>• Worked under the supervision of Dr. Ali Almansoori on a project in process systems engineering (Supply Chain Design and Optimization).</li><li>• Developed a steady-state power supply chain model for the future penetration of electric vehicles in urban locations. Model was validated by using a case study of Germany.</li><li>• Model results helped plan the additional electricity infrastructure needed to support additional electric vehicles in cities while considering geographical and environmental constraints.</li><li>• The model was developed using Mixed-Integer Linear Programming with a deterministic approach in GAMS.</li><li>• Project generated a journal publication and multiple conference papers.</li></ul>	

Visiting Graduate Researcher

June 2014 - December 2014

The Petroleum Institute, Abu Dhabi, UAE

- Worked under the supervision of Dr. Ali Almansoori on a research project within his group.
- Project involved the design and analysis of biodiesel production plant mechanisms using AspenPlus.
- Project included process optimization, economic analysis, utility integration, environmental impact and overall feasibility study for the production pathways.
- Findings were presented at the 7th International Conference on Applied Energy 2015 and obtained one peer-reviewed journal publication in Applied Energy (via Special Issue Invitation, Journal Impact Factor: 5.613)

Undergraduate Research Assistant

August 2011 - August 2012

Purdue University, West Lafayette, IN

- Engaged in research in the study of polyelectrolytes under the guidance of Dr. Chong Li Yuan.
- Conducted Laser-based experiments (FLS Spectroscopy) on polyelectrolytes and performed data analysis on the results.

**PEER -  
REVIEWED  
JOURNAL  
PUBLICATIONS**

1. Betancourt-Torcat, A., Poddar, T., Almansoori, A. (2018). A Realistic Framework for a Greener Supply Chain for Electric Vehicles. *International Journal of Energy Research*.
2. Betancourt-Torcat, A., Poddar, T., Almansoori, A. (2017). Design and Operation of a Supply Chain Model for Electric and Plug-in Hybrid Electric Vehicles: Snapshot Model. *27 European Symposium on Computer Aided Process Engineering 40*, 883-888.
3. Poddar, T., Jagannath, A., Almansoori, A. (2016). Use of reactive distillation in biodiesel production: A simulation-based comparison of energy requirements and profitability indicators. *Applied Energy 185*, 985-997.
4. Poddar, T., Jagannath, A., Almansoori, A. (2015). Biodiesel production using reactive distillation: A comparative simulation study. *Energy Procedia, 75*, 17-22.

**CONFERENCE  
PAPERS**

1. Poddar, T., Elkamel, A., Almansoori, A., Douglas, P.L. (2019). Design of a Future Energy System with Renewable Energy and Storage. Accepted for oral presentation at the 8th International Symposium on Design, Operation and Control of Chemical Processes (PSE Asia 2019) Bangkok, Thailand.
2. Poddar, T., Elkamel, A., Almansoori, A., Douglas, P.L. (2018). Polygeneration System Design with Renewable Energy and Storage. Oral presentation at the 68th Canadian Chemical Engineering Conference (CSCHE 2018), Toronto, ON, Canada.
3. Poddar, T., Betancourt-Torcat, A., Almansoori, A. (2016). A Power Supply-Chain Model for Plug-in Hybrid Electric Vehicles. Oral presentation at the 2nd UAE Graduate Student Research Conference (GSRC 2016) Al Ain, UAE.
4. Poddar, T., Betancourt-Torcat, A., Almansoori, A. (2016). Design of a Steady-State Power Supply Chain Model for Plug-in Hybrid Electric Vehicles. Accepted for presentation at the 7th International Symposium on Design, Operation and Control of Chemical Processes (PSE Asia 2016) Tokyo, Japan.
5. Poddar, T., Jagannath, A., Almansoori, A. (2015). Biodiesel Production using Reactive Distillation: A Comparative Simulation Study. Oral presentation at

the 7th International Conference on Applied Energy (ICAE 2015) Abu Dhabi, UAE.

6. Poddar, T., Jagannath, A., Almansoori, A. (2015). Techno-economic Analysis of Biodiesel Production using Reactive Distillation. Oral presentation at the 1st UAE Graduate Student Research Conference (GSRC 2015) Abu Dhabi, UAE.

## TEACHING EXPERIENCE

*Graduate Teaching Assistant* September 2017 - December 2017  
University of Waterloo, ON, Canada

- Assisted Dr. Hector Budman in the fourth-year undergraduate course Process Dynamics and Control.
- Responsibilities included providing teaching support during office hours and grading of assignments for over 90 students.

*Graduate Teaching Assistant* January 2016 - May 2016  
The Petroleum Institute, Abu Dhabi, UAE

- Assisted in the final-year undergraduate course Process Control and Dynamics.
- Conducting one tutorial session weekly for a class of 30 students.
- Tutorial sessions are being utilized to reinforce material taught during lectures.

*Graduate Teaching Assistant* August 2015 - December 2015  
The Petroleum Institute, Abu Dhabi, UAE

- Assisted Dr. Yasser Al Wahedi in the third-year undergraduate course Fluid Dynamics.
- Conducting two tutorial sessions weekly for a class of 40 students.
- Tutorial sessions were used to teach and explain various problems, concepts and quiz solutions.

*Graduate Teaching Assistant* January 2015 - May 2015  
The Petroleum Institute, Abu Dhabi, UAE

- Assisted the Mathematics Department at PI with the teaching of the course Pre-Calculus.
- Tutorial sessions were used to teach and facilitate the practice of problem sets and to reinforce material and concepts taught in lectures.

*Undergraduate Teaching Assistant* January 2010 - May 2013  
Purdue University Physics Department, West Lafayette, IN, USA

- Conducted laboratory sessions for Physics 172 - modern mechanics.
- Helped guide students in performing experiments, writing and executing computer-based code in Vpython

## AWARDS

- University of Waterloo International Doctoral Student Award (Awarded every term since Winter 2017)
- The Petroleum Institute Fellowship Graduate Research/Teaching Assistantship (Awarded Spring 2016)
- Winner of the Best Track Paper (Energy) at the 1st UAE Graduate Student Research Conference 2015
- Purdue University Semester Honors and Dean's List (2009,2012,2013)
- Agency for Science Technology and Research (Singapore) Scholarship (2005 - 2008)