

/Essam Zaini	<b>Mechanical &amp; Chemical engineer</b>	
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	<b>Date of birth</b>	20 October 1976
	<b>Email</b>	essam.alzaini@yahoo.com
	<b>Nationality</b>	Iraqi/Australian permanent resident
	<b>Languages</b>	English & Arabic fluently
	<b>Address</b>	14 Thorney Road, Fairfield West, NSW 2165
<b>Qualifications</b>	<p>2012 PhD in Chemical Engineering- The University of New South Wales - Sydney – Australia</p> <p>2003 Master Degree in Mechanical Engineering - The University of Technology – Iraq/Baghdad (recognised by Engineers Australia – professional engineer membership number 5077955)</p> <p>1998 Bachelor in Mechanical Engineering -The University of Technology – Iraq/Baghdad (recognised by Engineers Australia – professional engineer membership number 5077955)</p>	
<b>Key Skills</b>	<ol style="list-style-type: none"> <li>a) Expert in mechanical design and manufacture using most advanced drawing softwares such as Catia. Also able to use AutoCAD software.</li> <li>b) Expert in the design of air-conditioning systems along with ducting unites.</li> <li>c) Expert in compression ignition engines, design, repair and modifications.</li> <li>d) Expert in bio-fuel processing and fuel combustion.</li> <li>e) Expert in catalyst design and manufacture.</li> <li>f) Ability to work in harsh environment over extended shifts.</li> <li>g) Effective problem solving and highly efficient in dealing with conflict situations.</li> <li>h) Pay great attention to health, safety and security procedures – OH&amp;S.</li> <li>i) Pay great attention to the time.</li> <li>j) Excellent communication skills.</li> <li>k) Quite friendly personality.</li> <li>l) Happy to provide up to date national police check as well as health check if required.</li> <li>m) Effective team member, willing to learn from the first time, coaching others job skills.</li> <li>n) Effective decision maker.</li> </ol>	
<b>Career History</b>	<b>Roles &amp; Responsibilities</b>	
2013- 2016	<ul style="list-style-type: none"> <li>• International Lecturer at UNSW Sydney/Australia school of mechanical and manufacturing engineering/ school of chemical engineering.</li> </ul>	
<b>PhD candidate at “The University of New South Wales” – School of Chemical Engineering and Science- Sydney-Australia</b> 2010- 2013	<ul style="list-style-type: none"> <li>• Conducting experimental research on biodiesel processing from spent vegetable oil by using solid, recycled catalysts.</li> <li>• Design and manufacture the needed STR rector along with many types of solid catalysts.</li> <li>• Reporting obtained results within internationally recognised journals along with international conferences.</li> <li>• Supervise and help undergraduate students during their graduation projects and ensure the safe using of laboratory instruments.</li> <li>• Conducting annual internal oral presentations to school academic staff and postgraduate students.</li> </ul>	

<p><b>PhD candidate at “The University of New South Wales” – School of Mechanical Engineering and manufacture- Sydney-Australia</b> 2008- 2010</p>	<ul style="list-style-type: none"> <li>• Conducting experimental research on the possibility of utilising natural gas to fuel unmodified compression ignition engines thereby using the pre-produced biodiesel fuel as a primary igniters.</li> <li>• Study related advanced course such as advanced internal combustion engines 77% and refrigeration and air-conditioning 92%.</li> <li>• Modify the test cell (Ricardo single cylinder variable compression ratio engine) in order to introduce the natural gas streams CNG. This involves designing many engine parts such as intake manifold, Venture gas mixer as well as air heating chamber.</li> <li>• Design and Install the necessary measuring instruments such as combustion chamber pressure and temperature sensors, air and cooling water temperature sensors along with fuel flow meter. In addition, the use of available engines emission analyser.</li> <li>• Tutoring two subjects, internal combustion engines as well as advanced thermodynamics.</li> <li>• Exams supervision along with exam paper marking.</li> </ul>
<p><b>English Language student at the institute of Language “The University of New South Wales” Sydney-Australia</b> 2007- 2008</p>	<ul style="list-style-type: none"> <li>• Study English language for academic proposes. completed</li> </ul>
<p><b>Lecturer\deputy Dean and head of computer center at Al-Najaf Technical College of Engineering-department of automobile engineering-Iraq</b> 2003-2007</p>	<ul style="list-style-type: none"> <li>• Daily management of all collage facilities including the scientific, enrolment and general maintenance departments.</li> <li>• Maintain the influence communication with the ministry of higher education and scientific research. This includes representing the collage in the ministry conferences.</li> <li>• Supervise, review and assess all teaching activities including schedule of classes, examining and marking of undergrad and post grade students.</li> <li>• Supervise review and assess all development works of the college including establishing new laboratories as well as other facilities buildings. These include design the air-conditioning ducting systems for the new buildings.</li> <li>• Lecturing two subjects; fundamentals of internal combustion engines and fuel combustion.</li> </ul>
<p><b>Ms.C candidate at “The University of Technology – Department of Mechanical Engineering and Manufacture</b> 2000- 2003</p>	<ul style="list-style-type: none"> <li>• Study many advanced courses related to mechanical engineering such as internal combustion engines, air conditioning, computational fluid dynamic, thermodynamic, mathematics, solid materials ect....</li> <li>• Conducting theoretical and experimental research on water cooling towers.</li> <li>• Supervising a list of experiments in the internal combustion engines and refrigeration and air-conditioning laboratories for undergraduate students.</li> </ul>
<p><b>Officer in the former Iraqi army- Laboratory officer at “The University of Technology – Department of Mechanical Engineering and Manufacture- the Iraqi military collage of</b></p>	<ul style="list-style-type: none"> <li>• Conducting a list of experiments in the internal combustion engines and refrigeration and air-conditioning laboratories for undergraduate students.</li> </ul>

engineering 1998- 2000	
<b>Engineer / Contractor with the former ministry of military industry-Al-Qadissiya establishment</b> 1998-2000	<ul style="list-style-type: none"> <li>•In addition to my duties as laboratory officer, I was an engineering team member in the former Iraqi ministry of military industry, Al-Qadissiya establishment.</li> <li>•Contract finished since I had to start my master degree courses in mechanical engineering in 2000.</li> </ul>
<b>Bs.C candidate at “The University of Technology – Department of Mechanical Engineering and Manufacture-The Iraqi military collage of engineering</b> 1994- 1998	<ul style="list-style-type: none"> <li>•Undergraduate student in the department of Mechanical Engineering and Manufacture.</li> <li>•Outcomes graduated as 1<sup>st</sup> class honour on the mechanical engineering department and 4<sup>th</sup> class on the whole university.</li> </ul>

### Journal publications

- 1) **Essam O. Al-Zaini** and Dean Chesterfield (2013). Transesterification of Spent frying Oils over Aluminium Orthophosphate-Potassium Ribbed Bi-Functional Catalyst: Reaction Optimisation study. *SAE Journal of Fuels and Lubricants 2013.01.2453*.
- 2) **Essam O. Al-Zaini**, John Olsen, Tuan Huy Nguyen and Adesoji Adesina (2011). Transesterification of Waste Cooking Oil in Presence of Crushed Seashell as a Support for Solid Heterogeneous Catalyst. *SAE Journal of Fuels and Lubricants 2011.01.2226*.
- 3) Dean Chesterfield, **Essam O. Al-Zaini**, Ruediger Lange and Adesoji A. Adesina (2012). Steady-State Simulation of a Novel Extractive Reactor for Enzymatic Biodiesel Production. *Journal of Fuel Processing Technology*.
- 4) Limin Zhou, **Essam O. Al-Zaini** and Adesoji A. Adesina (2012). Catalytic Characteristics and Parameters Optimization of the Glycerol Acetylation over Solid Acid Catalysts. *Fuel*.
- 5) **Essam O. Al-Zaini**, Adesoji A. Adesina and John Olsen (2010). Waste Cooking Oil Conversion to Biodiesel in Presence of Solid  $K_3PO_4$  as Catalyst. *SAE International 2010.01.1962*.

### Conferences

- 1) **Essam O. Al-Zaini**, John Olsen and Adesoji A. Adesina (2010). Optimizing Impregnation Technique for the  $K_3PO_4/\gamma-Al_2O_3$  Catalyst Preparation for Waste Cooking Oil Conversion to Biodiesel. *8<sup>th</sup>-Intl-Colloquium-Fuels-Conference. Germany*.
- 2) **Essam O. Al-Zaini**, John Olsen, Tuan Huy Nguyen and Adesoji Adesina (2011). Biodiesel Production from the Ethanolysis of spent Frying Oil over Bi-Functional  $K_3PO_4/\gamma-Al_2O_3$  Catalyst.

*Camure 8<sup>th</sup> conference. Finland 22-25 May 2011.*

- 3) **Essam O. Al-Zaini**, John Olsen and Adesoji A. Adesina (2011). Waste Oil Conversion to Biodiesel over Alumina-Supported  $K_3PO_4$  in a Slurry Reactor: Deactivation Behaviour. *6th Asia Pacific Chemical Reaction Engineering Symposium (APCRE'11), September 18 – 21. 2011. Beijing. China.*
- 4) **Essam O. Al-Zaini**, Mara Cea, Dean Chesterfield and Adesoji Adesina (2012). Aluminium Orthophosphate Based bi-functional Catalyst for Ethanolysis Processing of Waste Cooking Oils to Biodiesel: Optimisation Study. *III Latin American Congress. (Bio-refineries), November 19-21.2012. Pucon. Chile.*
- 5) Dean Chesterfield, **Essam O. Al-Zaini**, Mara Cea and Adesoji Adesina (2012). Process Intensification for Advanced Biodiesel Production from Residual Oils. *III Latin American Congress. (Bio-refineries), November 19-21.2012. Pucon. Chile.*
- 6) **Essam O. Al-Zaini**, John Olsen, Dean Chesterfield and Adesoji Adesina (2013). Ethanolysis Conversion of Spent Frying Oils over Aluminium, Calcium-Phosphate-Based Bi-functional Formulated Catalysts: Catalytic Activity Assessment Study. *9th-Intl-Colloquium-Fuels\_conference.Germany.*
- 7) Matthias Klein, Chirag B. Dave, **Essam O. Al-Zaini**, Tuan-Huy Nguyen, Ruediger Lange and Adesoji A. Adesina (2011). ECT-based Investigation of the Photo-Catalytic Degradation of Glycerol using Air as the Oxidising Gas. *Camure 8<sup>th</sup> conference. Finland 22-25 May 2011.*

### **Reviewed publications**

- 1) 12FFL-0266 Study of Unconventional Cycles (Atkinson and Miller) with Mixture Heating as a Means for Fuel Economy Improvement of a Throttled SI Engines at Part Load-SAE International 2012.
- 2) 12FFL-0281 A Mont Carlo Based Turbulent Flame Propagation Model for Predictive SI in Cylinder Engine Simulation Employing Detailed Chemistry for Accurate Knock Prediction- SAE International 2012.
- 3) 13APAC-0172 Fuel Economy of SI Vehicle Fuelled by Ethanol/Gasoline blends-Rolls of Engine lubricant Viscosity-SAE International 2013.
- 4) 13PFL-0470 Fuel Flushing System to safeguard Engine & Fuel Injection Equipment from the Effects of Biodiesel deterioration-SAE International 2013.
- 5) 13PFL-0698 Reactivity controlled compression Ignition Drive Cycle Emissions and Fuel Economy Estimations Using Vehicle Systems Simulations-SAE International 2013.
- 6) 13PFL-0676 Close to Stoichiometric Partially Premixed Combustion-the Benefit of Ethanol in Comparison to Conventional Fuels-SAE international 2013.

