

Dr. Ahmed Elwardany



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|------------------------|---|
| Rank | Associate Professor |
| Department | Department of Mechanical and Industrial Engineering |
| University | Sultan Qaboos University |
| Email | a.elwardani@squ.edu.om |
| Mobile | +96876994557 |
| Address | Department of Mechanical and Industrial Engineering, Sultan Qaboos University, Muscat, Sultanate of Oman |
| Links | https://orcid.org/0000-0002-2536-2089 https://www.researchgate.net/profile/Ahmed-Elwardany-2 https://www.scopus.com/authid/detail.uri?authorid=36157730700 |
| Research Impact | h-index – Scopus: 25 and 1700 citation |

Education

| Degree | Specialization | Institution | Year |
|--------|------------------------|------------------------------|------|
| PhD | Mechanical Engineering | University of Brighton, UK | 2012 |
| MSc | Mechanical Engineering | Alexandria University, Egypt | 2009 |
| BSc | Mechanical Engineering | Alexandria University, Egypt | 2005 |

Theses

| Degree | Title | Institution | Month -Year |
|--------|---|------------------------------|-----------------|
| PhD | Modelling of multi-component fuel droplet heating and evaporation | University of Brighton, UK | March - 2012 |
| MSc | Modeling of heat, mass transfer and breakup processes in diesel fuel droplets | Alexandria University, Egypt | February - 2009 |

Academic Rank

| Rank | Month - Year |
|---------------------|----------------|
| Associate Professor | November- 2020 |
| Assistant Professor | November- 2015 |

Academic Experience

| Organization | Designation | Period |
|-------------------------------|--|---------------------------|
| Associate Professor | Sultan Qaboos University | October 2023 - Present |
| Associate/Assistant Professor | Alexandria University, E-JUST | November 2015 – September |
| Postdoctoral Fellow | King Abdullah University of Science and Technology (KAUST) | July 2012 – July 2015 |
| Research Officer | University of Brighton | January 2012 – June 2012 |
| Demonstrator | Alexandria University | September 2005 – May 2009 |

Grants – Principal Investigator PI

| | Funding Agency | Title | Amount - Status |
|---|----------------------|--|----------------------------------|
| 6 | STDF (Governmental) | STDF 46447: Utilization of Ammonia for Mobility Decarbonization | 2,496,660 LE - Running |
| 5 | STDF (Governmental) | STDF 43667: Producing Carbon Nanotubes Like-materials from Diesel Engine Exhaust: Environment-friendly Added Value | 1,330,520 LE - Running |
| 4 | ASRT (Governmental) | A Combined Fuel and Power (CFP) production System from Agri-food Industry Wastes: Design, Fabrication and Testing | 775,000 LE – Completed Aug 2023 |
| 3 | STDF (Governmental) | STDF 39410: A Novel Combined Gasifier/Carbonization Reactor for Production of Biogas and Biochar | 100,000 LE – Completed Sept 2020 |
| 2 | SARAYA Company | Jojoba oil to base lubrication oil | 10,000 USD, Running |
| 1 | Unilever Tea Factory | Carbonization and Graphitization Processes of Unilever’s Tea Factory Waste: Characterization and Optimization | 23,700 LE, Completed Sept 2020 |

Research Interests

- ✓ Carbon neutral-, Alternative and Low-Grade Fuels
- ✓ Morphology and Nanostructure of Soot
- ✓ Spray and Liquid Atomization
- ✓ Droplet Heating and Evaporation
- ✓ Combustion engines processes simulations using CONVERGE and ANSYS
- ✓ Biomass Gasification and Carbonization
- ✓ Gasification simulations using MFIX and ANSYS
- ✓ Nanoparticles Synthesis using CI engines and Flames

Teaching – Courses (2015 – Present)

| Undergraduate Course title | Number of times taught | Postgraduate Course title | Number of times taught |
|----------------------------|------------------------|----------------------------------|------------------------|
| Thermo-fluids | 5 | Advanced Thermodynamics | 4 |
| Thermodynamics | 5 | Thermal and Cogeneration Systems | 4 |
| Gas dynamics | 4 | Advanced Fuel and Combustion | 4 |
| Measurements | 6 | Measurements in Combustion | 2 |
| Combustion and Engines | 8 | | |
| Automotive Engineering | 4 | | |

No. of students as an academic advisor: 25 per semester for 8 years

No. of supervised FYP/Senior Design Projects: 12

No. of students supervised in FYP/Senior Design projects: 60+

Awards

| Name | Details | Year |
|----------------------------------|---|---------------|
| Millionaire Club | 2 times by E-JUST for getting projects with more than 1 million EGP budget | 2022 and 2023 |
| Post-doctoral Poster Competition | 2 nd Prize in the Post-doctoral Poster Competition held in KAUST Jan 2014 during the Winter Enrichment Program | 2014 |
| PETA award for young researchers | from ILASS-Europe 2011, Estoril, Portugal, 5-7 September 2011. | 2011 |

Consultations

- ✓ **1-3 2020: Unilever Lipton, thermal camera imaging for the packaging process to define the source of malfunction in the packaging process.**
- ✓ **3-8 2018 National Cement Factory: Evaluation of the Energy Efficiency of the factory and its main components. This also included providing different energy scenarios for the factory assuming different fuels for the kiln.**
- ✓ **1-2 2018: determination of fuel consumption of Vestia Company for clothes.**

Publications (5 recent papers)

1. Musyoka, S.K., Khalil, A.S., Ookawara, S.A. and **Elwardany, A.E.**, 2023. Investigating C3 and C4 esters and alcohols in a diesel engine: Combined influence of carbon chain length, oxyfuel type, and oxygen content. *Process Safety and Environmental Protection*. Volume 180, 475-486.
2. Elkady, H., Zewail, R., Mori, S., Ookawara, S. and **Elwardany, A.E.**, 2023. Methanol, ethanol and propanol droplets evaporation characteristics with dilute concentrations of hematite and magnetite nanoparticles. *Petroleum Science and Technology*, pp.1-20.
3. Almanzalawy, M.S., Elkady, M.F., Mori, S. and **Elwardany, A.E.**, 2023. Quantification of soot nanostructure produced from a diesel engine fueled with C3 ketone. *Energy*, 278, p.127790.
4. Musyoka, S.K., Khalil, A.S., Ookawara, S.A. and **Elwardany, A.E.**, 2023. Effect of C4 alcohol and ester as fuel additives on diesel engine operating characteristics. *Fuel*, 341, p.127656.
5. Khidr, M.E., Megahed, T.F., Ookawara, S. and **Elwardany, A.E.**, 2023. Effects of aluminum and copper oxides nanoparticles as fuel additives on diesel engine operating characteristics. *Atmospheric Pollution Research*, 14(4), p.101721.