

Mohammed AlAbbad

Bio:

Mohammed AlAbbad is a Postdoctoral fellow at King Abdullah University of Science and Technology (KAUST). His current research focuses on reactivity, thermal analysis, surrogate formulation and chemical kinetic modeling of heavy fuels. He obtained his Ph.D. and master's degrees in mechanical engineering from KAUST. His doctoral research focused on studying the reactivity and ignition behavior of petroleum-based fuels and Biofuels. He received his BS in mechanical engineering from Prince Mohammad bin Fahd University. He worked for Aramco and has 10 years of experience monitoring projects, maintenance progress, and engineering standards implementation.

Mohammed A. Al-Abbad
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Technology, Thuwal, Saudi Arabia**

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OBJECTIVE

Skilled researcher with extensive experience in ignition behavior, reactivity and chemical kinetics of hydrogen, natural gas, light and heavy conventional fuels, and gasification of residual oil and non-conventional vacuum residual oil fuels. Self-driven by a firm belief in meeting deadlines, effective management, and handling multiple tasks. Involved in conducting researches, including designing, modifying and implementation of experimental techniques and methodologies. That resulted in a total of 14 publications being accepted in selective journals and selected to give presentations in several conferences such as International Symposium on Combustion and U.S. National Combustion Meeting. Have strong and excellent academic standing with a high experience in the field of mechanical inspection, having more than 10 years of experience in monitoring projects and maintenance progresses and ensuring the implementation of engineering standards.

EDUCATION

- 2013 to 2018** **Doctor of Philosophy (PhD) in Mechanical Engineering**
King Abdullah University of Science and Technology (KAUST), Thuwal, K.S.A
Dissertation Topic: “*Reactivity and Ignition Delay Measurements of Petroleum-based Fuels, Surrogate Fuels and Biofuels*”
Academic Supervisor: Prof. Aamir Farooq
- 2012 to 2013** **Master of Science in Mechanical Engineering**
King Abdullah University of Science and Technology (KAUST), Thuwal, K.S.A
- 2006 to 2010** **Bachelor in Mechanical Engineering**
Prince Mohammed Bin Fahd University, Khobar

WORK EXPERIENCE

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, Thuwal, K.S.A
Clean Combustion Research Center

Postdoctoral Fellow
2018 – present

- Conduct research in the following areas:
 - Residual oils surrogate formulation and chemical kinetic model development for gasification processes
 - Nuclear magnetic resonance (NMR) analysis
 - Thermogravimetric (TGA) and differential scanning calorimetry (DSC) analyses of heavy fuel oil (HFO) and non-conventional vacuum residual oil (VRO)
 - Laser absorption technique for monitoring and evaluating elementary reactions processes
 - Fourier transform infrared spectroscopy (FTIR)
 - Fourier transforms ion cyclotron resonance (FT-ICR) mass spectrometry (MS)
 - Elemental analysis
 - Ignition delay time measurement of light and heavy conventional fuels using shock tubes and rapid compression machines
- Manage and coordinate research projects in collaboration with external partners.
- Mentor graduate students, plan and monitor the progress of their graduate research.

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, Thuwal, K.S.A
Clean Combustion Research Center

PhD Researcher
2013 – 2018

- Conduct ignition delay time and speciation measurements in shock tubes.
- Study the chemical kinetics of pyrolysis and oxidation using laser diagnostic techniques.

SAUDI ARAMCO, Ras Tanura, K.S.A
Northern Area Corrosion and Inspection Department

Mechanical Inspector
2002 - 2012

- Monitor projects, maintenance progress, and engineering standards implementation.

SAUDI ARAMCO, Dhahran, K.S.A
NAOO Young Health, Safety & Environmental Council
HSE Associate (March 2011 – 2012)

- Initiate safety recommendations to improve health, safety and environment.

CODES & STANDARDS

Familiar with ASTM, ASME, API and Saudi Aramco standards.

COMPUTER SKILLS

- Microsoft Windows, Apple OS & Linux operation systems
- ChemKin, Solid Work (CAD), COMSOL, Python & Matlab
- Machine learning

SCIENTIFIC PUBLICATIONS

- Ignition delay time measurements of diesel and gasoline blends. *Combustion and Flame*, 222, 460-475 (2020). <https://doi.org/10.1016/j.combustflame.2020.09.008>
- Ignition Delay Measurements of a Low-Octane Gasoline Blend, Designed for Gasoline Compression Ignition (GCI) Engines. *Proceedings of the Combustion Institute* (2018). <https://doi.org/10.1016/j.proci.2018.05.097>
- Autoignition of straight-run naphtha: A promising fuel for advanced compression ignition engines. *Combustion and Flame*, 189, 337-346 (2018). <https://doi.org/10.1016/j.combustflame.2017.10.038>
- Ignition delay time measurements of primary reference fuel blends. *Combustion and Flame*, 178, 205-216 (2017). <https://doi.org/10.1016/j.combustflame.2016.12.027>
- A high temperature kinetic study for the thermal unimolecular decomposition of diethyl carbonate. *Chemical Physics Letters*, 684, 390-396 (2017). <https://doi.org/10.1016/j.cplett.2017.07.020>
- On the high-temperature unimolecular decomposition of ethyl levulinate. *Proceedings of the Combustion Institute* (2016). <https://doi.org/10.1016/j.proci.2016.06.034>
- High Temperature Unimolecular Decomposition of Cyclopentanone. *Proceedings of the Combustion Institute* (2018). <https://doi.org/10.1016/j.proci.2018.05.076>
- High-temperature unimolecular decomposition of ethyl propionate. *Chemical Physics Letters*, 664, 184-190 (2016). <https://doi.org/10.1016/j.cplett.2016.10.012>
- Ignition studies of n-heptane/iso-octane/toluene blends. *Combustion and Flame*, 171, 223-233 (2016). <https://doi.org/10.1016/j.combustflame.2016.06.008>
- Compositional effects on the ignition of FACE gasolines. *Combustion and Flame*, 169, 171-193 (2016). <https://doi.org/10.1016/j.combustflame.2016.04.010>
- Antiknock quality and ignition kinetics of 2-phenylethanol, a novel lignocellulosic octane booster. *Proceedings of the Combustion Institute*. (2016) <https://doi.org/10.1016/j.proci.2016.05.041>
- Mixed butanols addition to gasoline surrogates: Shock tube ignition delay time measurements and chemical kinetic modeling. *Combustion and Flame*, 162(10), 3971-3979 (2015). <https://doi.org/10.1016/j.combustflame.2015.07.035>
- Autoignition studies of Liquefied Natural Gas (LNG) in a shock tube and a rapid compression machine. "Fuel, Volume 232, (2018) <https://doi.org/10.1016/j.fuel.2018.04.168>
- An experimental and chemical kinetic modeling study of 1, 3-butadiene combustion: Ignition delay time and laminar flame speed measurements. *Combustion and Flame*, 197, 423-438 (2018). <https://doi.org/10.1016/j.combustflame.2018.08.006>