

MOHAMMED AL-KHAYYAT

Manama • Bahrain • +973-34061850 • mohammedomar97@gmail.com • <https://mohammedalkhayyat.site/>

CAREER PROFILE

Chemical Engineer with 2 years experience in research and development within polymer nanocomposites, digital fabrication, computer AI vision and microfluidics. Completed professional programs in AI and data science from IBM and Google. Participated in several international conferences and events. My academic interests are in reaction kinetics, thermodynamics, nanotechnology, nanocomposites, machine learning, biotechnology, microfluidics, and Industrial automation.

Core competencies includes planning and designing experiments, programming, mathematical modeling, process modeling, developing integrated manufacturing system, analyzing cost of material, peer tutoring and research assistantship.

EDUCATION

UNIVERSITY OF BAHRAIN, Isa Town, Bahrain, 2015

B.S., Chemical Engineering.

GPA: 3.39/4

- Worked as teaching assistant in thermodynamics 1, chemical reactor design and computer aided plant design.
- Leader of Bahrain International Chem-E-car team; built a hydrogen fuel-cell based car. Third place winners among 15 international team.
- Head of the students council in the department of Chemical Engineering
- Most Distinguished Senior Project award.

RESEARCH PAPERS

- **Cleaner Engineering and Technology**, Volume 4, October 2021, 100168
 - Sabri Mrayed, Mohamed Bin Shams, Mohammed Al-Khayyat*, Nasser Alnoaimi, Application of pinch analysis to improve the heat integration efficiency in a crude distillation unit
- **Submitted for Initial Review:** “Kinetic modeling and thermodynamic analysis of toluene disproportionation reactions over ZSM-5 based catalysts.”
- **Submitted for Initial Review:** “Rapid digital fabrication of microfluidic chip devices using CNC laser technology” research project in association with Fablab Bahrain.

PROFESSIONAL EXPERIENCE

BFG International, W.L.L. Manama, Bahrain

Oct 2020-Present

Global leader in composite design, engineering and manufacturing for Rolling Stock, Sanitary Cabins, Rail Interiors, Front Ends, Architecture, Industrial, Wind and Renewable Energy.

Research and Development Engineer

Conducted studies, developed, and supervised programs to achieve the best use of equipment, human resources, technology, materials, and procedures to enhance efficiency and productivity. Determined optimum inventory levels for production and allow optimum utilization of machinery, materials and resources

- Saved \$500,000 annually by analyzing raw materials consumption and developing new process strategies which led to decrease materials consumption.
- Reduced working hours for production workers eliminating manual processes such as packaging and sanding by introducing new machineries and training methodologies.
- Helped in securing \$2 Million project by designing new process specific for client product requirements.

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Yokogawa Middle East & Africa B.S.C. Isatown, Bahrain

Summer 2018

Summer Intern

- Built a part of OTS system by simulating a dynamic model of an existing gas oil separation plant unit while tuning controllers and control loops to control separators' liquid levels, temperature and pressure.
- Test and tune of dynamic start-up and shutdown while analyzing potential hazards.

University of Bahrain Isatown, Bahrain

2019-2020

Research Assistant

- Worked on “Kinetic modeling and thermodynamic analysis of toluene disproportionation reactions over ZSM-5 based catalysts.” With my professor, my work involved numerical modeling of the reactions kinetics to solve for unknown rate of reaction parameters.

2016 - 2019

Teaching Assistant, Peer Tutor

- Raised sections average by 30% by tutoring more than 80 students with reactor design problems while helping in several simulation projects in modelling reactors, distillation columns and absorbers.
- Assisted in grading assignments and quiz papers for more than 200 students for thermodynamics' course.

INTERNATIONAL CONFERENCES CONTRIBUTION

- **MEPEC conference & exhibition 2019:** Leader of Bahrain's Chem-E-Car team in AIChE MENA competition. Designed the chemical and electrical aspect of the car.
- **MEPEC conference & exhibition 2019:** Organizer in ChemME Youth Initiative.

HARD SKILLS

- Programming with different languages such as C++, Python, C# and R.
- Experienced in engineering programs including MATLAB, 3D Max, Aspen products (HYSYS, Plus, etc.), Computational fluid dynamics.

CERTIFICATIONS

- IBM AI Engineering Professional Certificate provided by IBM.
- IBM Data Science Specialization by IBM.
- Chemical Process Safety Certificate (SACHE) by the American Institute of Chemical Engineers.
- Python Data Structures Certificate by University of Michigan.

AWARDS

- Most Distinguished Senior Project award.
- 2nd place in NASA's space apps competition with “best inventive design for specific problem” award.
- 3rd place in AIChE Middle East Regional Chem-E-Car Competition.

VOLUNTEERING AND ACTIVITIES

- Volunteering in the Campaign to Combat Coronavirus (COVID-19), Bahrain.
- Volunteered in the Bahrain Society for the Prevention of Cruelty to Animals by grooming, walking, and playing with the animals.
- Leader of the Chemical Engineering Student Council. Contributed to helping students getting their problems and work with the chemical engineering department to plan solutions.
- Leader of The SDGs community team in University of Bahrain.