

# ALAA MWAFY

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## EDUCATION

**University of Michigan - Ann Arbor**

**Jan 2023 – May 2027**

**Ph.D. in Chemical Engineering**

- Utilized an in vitro parallel plate flow chamber to assess platelet and leukocyte aggregation at sites of inflammation and injury
- Probed the role of platelet–leukocyte interactions on thrombotic diseases
- Loaded an anti-platelet drug in PLGA for controlled delivery in thrombotic diseases
- Utilized Emulsion Solvent Evaporation (ESE) method to make drug-loaded PLGA micro/nano-particles
- Assessed drug loading efficiency and drug encapsulation efficiency of fabricated PLGA microparticles
- Employed fluorescence microscopy and ImageJ to examine leukocyte adhesion to endothelial cells under various hemodynamic conditions
- Cultured Human Umbilical Vein Endothelial Cells (HUVECs) for blood flow experiments
- Used Scanning Electron Microscopy (SEM) to characterize polymeric particles

**New York University, College of Dentistry, New York, NY**

**Sep 2020 – May 2022**

**Dual Master of Science in Biomaterials & Clinical Research, GPA: 3.92**

Relevant Coursework: Principles of Biomaterials, Polymers and Biopolymers, Metal and Ceramic Biomaterials, Fundamentals of Clinical Trials I & II, Biostatistics, Scientific Writing, Biomaterials Tissue Interface I & II, and Epidemiology

**United Arab Emirates University, College of Engineering, Abu Dhabi, UAE**

**Aug 2015 – May 2020**

**Bachelor of Science in Chemical Engineering, GPA 3.91/4.00 (High Honors)**

Relevant Coursework: Polymer Engineering Physical Chemistry I & II (with lab), Biochemistry, Organic Chemistry, Basic Biology, Instrumental Analysis for Chemical Engineering, Probability and Statistics

**NYU Abu Dhabi Sheikh Mohamed Bin Zayed Scholars Program (SMSP) Alumni**

**Sep 2019 – May 2020**

Coursework: Public Speaking and Leadership Skills, US Foreign Policy and Critical Thinking and Persuasive Writing

## RESEARCH/WORK EXPERIENCE

**Intermediate Research Tech**

**Sep 2022 – Dec 2022**

**University of Michigan - Ann Arbor**

Ann Arbor, MI

- In vivo administration of engineered therapeutics in mice
- Performed flow cytometry on blood samples to distinguish different populations of leukocytes and identified molecular markers implicated in inflammatory disease
- Fabricated polymeric particles using Emulsion Solvent Evaporation (ESE) method

**Research Assistant / McDevitt Lab**

**Sep 2021 – Mar 2022**

**NYU College of Dentistry**

New York, NY

- Microfabrication and assembly of microfluidic devices for oral cancer screening
- Performed transport studies to assess the effect on staining and distribution of oral cancer cells
- Enhanced oral cancer assays by improving staining and imaging of oral cancer cells

**Substance Abuse Research Education and Training (SARET) Intern**

**Jun 2021 - Aug 2021**

**New York University, Grossman School of Medicine**

New York City, NY

- Research project: identified differences in quitting rates for smokers in smoking cessation interventions with comorbid substance use disorders compared to smokers without comorbid substance use disorders.
- Reviewed the literature on smoking interventions for hospitalized smokers with substance use disorders
- Completed training modules on substance use topics: epidemiology, neurobiology, screening, treatment, and the personal impact of substance use disorders.
- Presented preliminary results to the SARET cohort and NYU faculty in addiction research
- Recruited patients to the FIESTA II research study and completed follow-ups for different time-points
- One publication as first author is in progress on this research

## **Clinical Research Coordinator**

**Jun 2021 - Jul 2021**

### **Nanit**

New York City, NY

- Analyzed sleep and survey data from company baby monitor to answer a variety of research questions.
- Communicated with collaborators at Yale University in analyzing and interpreting stress and sleep data
- Presented data findings in visually appealing tables and graphs in company meetings
- Collaborated with the Director of Clinical Research to execute projects in a timely fashion
- Prepared and launched research campaigns to gather information on research subjects using Alchemer, Intercom and Mailchimp
- Used Redash to gather data from company baby monitors

## **Clinical Research Assistant**

**Mar 2021 - May 2021**

### **New York University Langone Hand Center**

New York City, NY

- Proofread grant applications
- Complied and analyzed clinical data using statistical software (SPSS & SAS) for publication in medical journals
- Screened the body of literature and identified the most relevant clinical trials and systematic reviews on various research topics

## **RESEARCH EXPERIENCE AND COMPETITIONS**

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### **NYU Abu Dhabi Visiting Undergraduate Research Program (Naumov Group Lab)**

**Jun 2020 – Aug 2020**

- Investigated the underlying intermolecular interactions of organic-based solid crystals to understand how they could be repeatedly actuated, thereby optimizing their use in prosthetics and other applications
- Assisted in performing literature reviews and communicated findings to group members

### **Youth Innovators Competition and Design Bootcamp 2020 on COVID-19 – UBORA**

**Jun 2020**

- Designed and modeled a ventilator adapter that can split a ventilator between two patients with acute respiratory distress syndrome (ARDS) during the COVID-19 pandemic
- Won 2nd place in the design competition in terms of technical implementation, documentation, presentation, and the potential health impact of the medical device

### **Graduation Project: Solid fuel production from date palm tree waste**

**Aug 2019 – May 2020**

- Collaborated with a group to develop a process for solid fuel production from date palm tree waste
- Presented project in front of an examination committee of acclaimed professors in the Department of Chemical Engineering at UAE University (Received an A grade)

### **Falling Walls Lab Research and Competition - Berlin, Germany**

**Nov 2018**

- Proposed and designed a wound dressing design using silicone nano-fibers and silver nanoparticles to speed up the healing process of hypertrophic scars
- Pitched the idea in the Falling Walls lab finale, in front of a highly acclaimed jury in business and academia in Germany

### **Undergraduate Summer Research Projects**

**Jun 2019, 2018 & 2017**

Worked on 3 research projects, namely improving the efficiency of CIGS thin-film solar cells, enhancing wound dressings for hypertrophic scars, and enhancing diabetic retinopathy detection software

## **INTERNSHIP**

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### **Schlumberger Internship – Abu Dhabi – Well Services**

**Feb 2019 – May 2019**

- Conducted lab tests on cement slurries placed in oil wells to ensure they meet client requirements

## **SKILLS**

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- Experienced in IBM SPSS and REDCap and familiar with SAS
- Skilled in searching Medline using MESH and Clinical Queries
- Knowledge of various engineering software: Fusion 360, Minitab, UNISIM, Polymath, MATLAB, and programming in C using Xcode
- Advanced proficiency in MS Word, Excel, PowerPoint, Outlook and Access
- Skilled in Mac and Windows literate
- Experienced in academic writing through writing research reports
- Excellent presentation skills from poster presentations
- English (fluent) and Arabic (fluent)

## **LAB SKILLS**

Spectroscopic, electro-analytical and chromatographic methods of chemical analysis, distillation, liquid- liquid extraction, recrystallization, analysis of filtration, precipitation, desiccation, weighing solids, chromatography procedures, fluorescence microscopy and NMR spectrometry, standard protein characterization techniques & enzyme activity assays, spectrophotometry and SDS-gel electrophoresis, DNA isolation and purification procedures and immunohistochemistry.

## **CERTIFICATES**

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- ACRP Improving Recruitment, Retention and Accrual in Clinical Trials Certification
- ACRP Ethics and Human Subject Protection: A Comprehensive Introduction Certification
- ACRP Implementing a Patient-Centered Informed Consent Process Certification
- ACRP Informed Consent Simulation Certification
- ACRP Good Clinical Practice (GCP) Simulation Certification
- ACRP Understanding Clinical Trials Protocols: Key Consideration for Effective Development and feasibility Review Certification