

Marcus Okafor

Graduate Process Engineer

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Profile

Chemical Engineering graduate from the University of Birmingham with a **12 month industrial placement** at INEOS Grangemouth. Supported process optimisation on an ethylene cracker unit, contributing to a **3.2% yield improvement**. Participated in **6 HAZOP sessions** and updated **15 P&IDs** in SmartPlant P&ID. Graduated with **Upper Second Class Honours (66% average)** and hold IChemE graduate membership.

Experience

Process Engineering Placement Student, INEOS, Grangemouth

Jul 2024 – Jun 2025

Completed a 12 month Year in Industry placement within the olefins production unit at INEOS Grangemouth.

- Supported process optimisation studies on an ethylene cracker, analysing operating data and recommending parameter adjustments that contributed to a **3.2% yield improvement**
- Updated **15 P&IDs** in SmartPlant P&ID following a plant modification, ensuring compliance with COMAH documentation standards
- Participated in **6 HAZOP sessions** as a scribe, recording actions and follow-ups for a furnace revamp project valued at **£1.4 million**
- Performed mass and energy balance checks on **3 distillation columns** using Aspen HYSYS to verify simulation accuracy against plant data

Chemistry Tutor (Part-time), Explore Learning, Birmingham

Sep 2023 – Jun 2024

Provided one-to-one and small group tutoring in GCSE and A-Level Chemistry.

- Tutored **15 students per week** across two centres, with an average grade improvement of **1.5 grades** over 6 months

Education

BEng (Hons) Chemical Engineering in Chemical Engineering, University of Birmingham, Birmingham

Sep 2022 – Jun 2026

Graduated with Upper Second Class Honours (**66% average**). Programme accredited by IChemE for IEng.

- Final year group design project (team of 5): designed a complete methanol synthesis plant from CO₂ feedstock, including PFD, heat integration, and economic analysis showing an **IRR of 14%**
- Relevant modules: Reaction Engineering, Separation Processes, Process Control, Safety and Loss Prevention

Skills

Aspen HYSYS, SmartPlant P&ID, Process Simulation, Mass & Energy Balances, HAZOP Methodology, P&ID Reading & Updating, Distillation & Separation, Process Safety (COMAH), Heat Exchanger Design, MATLAB, Technical Report Writing, Microsoft Excel (VBA)

Certifications

IChemE Graduate Member (GradIChemE), Institution of Chemical Engineers

Sep 2025 – Sep 2025

IOSH Managing Safely, Institution of Occupational Safety and Health

Feb 2025 – Feb 2025

Languages

English - Native, Igbo - Conversational

Projects

CO₂-to-Methanol Synthesis Plant Design (Group Design Project)

Sep 2025 – Apr 2026

Designed a conceptual methanol synthesis plant using captured CO₂ as feedstock, within a team of 5.

- Developed the full process flow diagram with **12 unit operations** and performed heat integration using pinch analysis, recovering **38% of waste heat**
- Sized the main reactor, 2 distillation columns, and 4 heat exchangers using Aspen HYSYS
- Produced an economic analysis showing a capital cost of **£18 million** and an IRR of **14%** over 20 years

Extra Curricular Activity

University of Birmingham ChemEng Society Treasurer

Sep 2024 – Jun 2025

Managed a society budget of **£2,400** and organised **3 industry talks** with speakers from Johnson Matthey, AstraZeneca, and BP.