SYED KAMRUL AHSAN

M.Sc. Student, Petroleum and Mineral Resources Engineering
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RESEARCH INTERESTS

Carbon capture, utilisation and storage; geological CO2 storage and injection optimisation; compositional and coupled reservoir simulation; caprock and fault integrity under injection-induced stress change; machine-learning surrogate modelling and uncertainty quantification for subsurface systems.

EDUCATION

M.Sc. in Petroleum and Mineral Resources Engineering
Bangladesh University of Engineering and Technology (BUET), Dhaka
CGPA 3.21 / 4.00. Supervisor: Dr. Shahriar Mahmud. Thesis topic under definition; current research is on carbon capture, utilisation and storage using the CMG reservoir simulation suite.

B.Sc. in Applied Chemistry and Chemical Engineering
University of Rajshahi, Rajshahi, Bangladesh
CGPA 3.48 / 4.00. Supervisor: Prof. Dr. Nayeem Faruqui. Thesis: *Methods of Synthesis, Characteristics and Environmental Application of MXene Materials*.

RESEARCH EXPERIENCE

M.Sc. Research — Carbon Capture, Utilisation and Storage *ongoing*
Department of Petroleum and Mineral Resources Engineering, BUET · Supervisor: Dr. Shahriar Mahmud

- Building compositional reservoir simulation models of CO2 storage in the CMG suite (GEM), with the thesis question being defined around injection performance and storage security.
- Developing the modelling workflow that will support the study: fluid description, injection scheduling, and assessment of pressure and plume evolution in the storage formation.

Nodal Analysis and Production Optimisation of a Gas-Condensate Well *Spring 2026*
Course research project (PMRE 6005), Department of Petroleum and Mineral Resources Engineering, BUET

- Built a single-well nodal model in Petroleum Experts PROSPER comprising a black-oil PVT description, a cased-hole completion and wellbore model, and Mukherjee–Brill vertical lift performance solved at the bottom node.
- Regressed the inflow performance relationship on four stabilised multirate test points using the back-pressure (C and n) model, obtaining a deliverability exponent of 0.845 and an absolute open flow potential of approximately 29.9 MMscf/d, and verified the fit by independent hand calculation.
- Quantified the sensitivity of deliverability to tubing inside diameter, wellhead backpressure and water-gas ratio, evaluated performance at 60 per cent reservoir depletion, and screened the operating points against API RP 14E erosional velocity limits and the Turner criterion for liquid loading.

Production Decline Analysis of a Shallow Gas Reservoir Producing Gas and Water *August 2026*
Field study, Bhola gas field, Bangladesh

- Investigated the declining production behaviour of a shallow gas reservoir producing gas and water simultaneously, identifying the reservoir and production-related causes of the decline and evaluating strategies for improving and sustaining gas deliverability.

FIELD AND INDUSTRIAL EXPOSURE

Deep Well Drilling and Well Logging Field Study — Titas-31 *July 2026*
CCDC-operated drilling project, Titas gas field, Brahmanbaria, Bangladesh

- Observed deep-well drilling operations at the rig site, including drilling-fluid circulation, well-control practice and drilling equipment in service.
- Followed wireline logging and formation-evaluation operations, and how the resulting data are interpreted to assess hydrocarbon potential in the target formations.

TECHNICAL SKILLS

Reservoir simulation CMG — GEM, IMEX and STARS (used in research projects, including CO_2 storage modelling)

Well performance Petroleum Experts PROSPER — nodal analysis, IPR matching, VLP correlations (confident)

Well test analysis KAPPA Saphir (coursework)

Programming Python (confident); MATLAB (confident)

RELEVANT GRADUATE COURSEWORK

Reservoir Engineering (PMRE 6001); Advanced Reservoir Engineering (PMRE 6002); Reservoir Simulation (PMRE 6010); Petroleum Production Engineering (PMRE 6005); Well Test Analysis (PMRE 6006); Advanced Natural Gas Engineering (PMRE 6008); Well Logging and Formation Evaluation (PMRE 6003); Petroleum Geology (PMRE 6014); Petrophysics and Fluid Flow Laboratory, Analytical and Testing Laboratory (PMRE Lab 1 and 2).

LEADERSHIP AND COMMUNITY SERVICE

Director *January 2025 – present*

Phulkuri Asar, Dhaka City Dishari, Dhaka

- Lead and coordinate child and youth development programmes covering education, creativity, leadership, physical fitness and community service, with responsibility for planning, delivery and volunteer coordination.

LANGUAGE PROFICIENCY

English — full professional proficiency; medium of instruction throughout undergraduate and graduate study. **Bengali —** native.

REFERENCES

Dr. Shahriar Mahmud — *M.Sc. supervisor*

Department of Petroleum and Mineral Resources Engineering, Bangladesh University of Engineering and Technology · shahriarmahmud@pmre.buet.ac.bd

Mahadehe Hasan — Deputy Director (Plannig and PSC)

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