



# SA'AD ABD AR RAFIE

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## EDUCATION

- Ph.D. in Environmental Engineering**, (CGPA: **3.76**) The University of Tennessee, Knoxville **Aug 2017- August 2023**(Expected)  
**MSc in Environmental Engineering**, (CGPA: **3.80**) The University of Tennessee, Knoxville **Aug 2017- Aug 2022**  
**B.Sc. in Civil Engineering**, Bangladesh University of Engineering and Technology, Dhaka **Feb 2011 - Aug 2016**

## EXPERIENCE

- **Worked in contaminated groundwater** at DOE superfund site (DOE ENIGMA Project (<http://enigma.lbl.gov>) sampling water from wells for microbial, geochemistry and genomic analysis. Performed **slug** and **pump tests**, maintained infield **bioreactor** systems at background site for short term geochemical study. Trained in the use of **high-pressure ion chromatography** to measure ion concentrations in water samples. **OSHA 40-Hour HAZWOPER** and **Rad Worker I & II** certified (training up to date)
- **Characterized subsurface media** through **soil core sampling** and **field geochemistry** measurements, proficient in **chemical extraction** and analytical techniques for soil, and trained in powder **X-Ray Diffraction** for phase identification and relative abundance estimate of components in solid media using **GSAS-II** and **Rietveld refinement**.
- **Experience in microbiology laboratory** techniques for **16s rRNA sequencing** and metagenomics. Skilled in **bioinformatics** analysis through R, python, and platforms like qiime2. Applied **machine learning** techniques to predict geochemical response using 16s data.
- **Conducted factory safety assessment** of an **asbestos** cement sheet manufacturing plant.
- **Experience in wastewater treatment design** using Upflow Anaerobic Sludge Blanket (UASB) reactor for Textile and Leather industry effluent. Conducted data collection for **sustainability and environmental compliance**, performed site monitoring, prepared project and feasibility reports, preliminary Environmental Impact Assessment (EIA) drafts, CAD drafting and participated in design reviews. Characterized **sewage sludge** and incinerator ash analysis using X-ray Diffraction and Bomb Calorimetry to evaluate their environmental impact.
- **Policy assessment and analysis**, and social research experience with multilateral transboundary water issues and coastal adaptation initiatives in disadvantaged regions of Bangladesh. Supervised field interviews, stakeholder meetings, Townhall discussions, and focused group discussions
- **Visualized geospatial data** using **ArcGIS** and **QGIS** to analyze solid waste disposal in urban areas and generate burn severity maps and indices for controlled and wildfire burns and applied **climate vulnerability indices** to assess community risks
- Developed **leadership and mentorship** skills through field and lab work, as well as outreach activities. Mentored 8 undergraduate students, including 3 through the **NSF REU** (Research Experience for Undergraduates) program. Science writing experience as columnist for Ask a Scientist at UTK's Daily Beacon Newspaper.
- **Research and project development** skills honed as part of multiple DOE-BER proposal submission team, member of DOE funded research project at a superfund site.

## EMPLOYMENT

**Graduate Research Assistant | Supervisor: Terry Hazen Ph.D. | Aug 2017 – Present**

*Department of Civil and Environmental Engineering, University of Tennessee, Knoxville | Knoxville, TN USA*

**Research Associate | Supervisor: Roufa Khanom | Nov 2016 – Jul 2017**

*Center for Climate Change and Environmental Research, BRAC University | Dhaka, Bangladesh*

**Environmental Engineer | Supervisor: Asiqur Rahman | Sep 2016 – Oct 2016**

*Kingsley™ Group (formerly: Kingsley Engineering Service Corporation) | Dhaka, Bangladesh*

## LEADERSHIP EXPERIENCE

**President, Bangladesh Student Association, The University of Tennessee, Knoxville**

**March 2019 – March 2020**

## FELLOWSHIP

- Tennessee Fellowship for Graduate Excellence  
*University of Tennessee, Knoxville*

**Aug 2017 - Aug 2021**

## PUBLICATIONS AND PRESENTATIONS

6 **International** conference publications and presentations; 1 **Industrial** report; 2 **Peer-reviewed** journal publications; 2 Science communication /outreach