

B.M. Rabby Hossain

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Date of Birth: 01 January, 1986

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Research Interest:

Environmental pollution investigation using GPR, Water treatment for leather, sewage and textile effluent, Geophysical and Geotechnical investigations for Sustainable Development, Climate Change.

Summary

- Well experienced with Ground Penetrating Radar (GPR), depth knowledge in data acquisition, data processing, 2D and 3D modelling and interpretation;
- Experienced in Shallow Seismic, Microtremor as well as Vertical Electrical Sounding data acquisition and processing;
- Basics in Industrial effluent treatment
- Practical knowledge in ArcGIS 10.1.
- Experience in remote sensing (i.e., Image classification and analysis) and Photo Geology;
- Proven Experience in Heavy Mineral deposits identification, microscopic analysis and exploration;

Work Experiences

Current Position: Lecturer (October, 2014 – Present)

Employer: Department of Disaster Science and Management, University of Dhaka, Dhaka-1000, Bangladesh.

Responsible for Courses:

- Fundamental of Earth Sciences
- Introduction to Environment and Ecosystem
- Hydrogeology and water resources
- Earth materials Lab.
- Remote sensing Lab.
- GIS Lab.
- Hazard Analysis Lab.
- Environmental Pollution Lab

Position held: Geologist (January 2012 – July 2012)

Employer: Premier Minerals Limited (Australian Company, works in Bangladesh)

Responsibilities: Extensive field work for heavy mineral deposits Identification, Sampling, laboratory analysis, Microscopic identification and exploration.

Educational Qualifications

- **Masters in Environmental Engineering and Tropical Hydrogeology**

(Sep. 2012- Continuing)

Awarded German Academic Exchange Service (DAAD) scholarship from German Government

- **Courses Taken:**

Engineering Geophysics (Ground Penetrating Radar, Advanced Professional Course):

Practical, advanced application of a GPR system including processing and geological interpretation of data. 2D and 3D surveys, CMP analysis (velocity-depth profile), monitoring, and local moisture sounding.

Geoenvironmental Engineering: Principles of environment related civil and underground construction and engineering, in situ facilities, waste disposal covers and liners, treatment technologies, in situ methods, theory of mass and flow transport, behaviour of contaminants, properties of waste, contaminated soil and rock, groundwater rehabilitation technologies.

Geo-Hazards and Geo-Resources :

Introduction to geohazards (e.g. earthquakes, tsunamis, volcanoes, landslides) and the management of georesources (e.g. raw materials, groundwater reservoirs, soils, geosites).

Introduction to the geology of raw materials with focus on industrial minerals and the pit and quarry industry.

Geoinformation Systems (GIS):

GIS I (Techniques): Concepts of Geoinformation Systems, special features of Geoinformation Systems, software components of ArcGIS, data types, georeferencing, editing and manipulating spatial data, spatial queries, interpolation techniques, thematic mapping and map layout, use of ArcGIS extensions (Spatial Analyst, 3D Analyst).

Remote Sensing: Introduction to remote sensing techniques. Exercises with aerial photographs within a stereoscopic model by drawing and interpreting valley systems and geology; determination of quantitative data (e.g. difference in elevation, thickness of bed and strike and slip).

Statistics: Introduction on statistical methods; data presentation; elementary statistics, e.g. t-tests, F-tests, chi-square tests, analysis of variance, non-parametric tests; analysis of multivariate data, e.g. cluster analysis, PCA, CA, DCA; time series analysis, e.g. analysis of stationary and non-stationary data; PC-based exercises.

Geophysical Field Course: Introduction into various methods of applied engineering geophysics; Seismic, Geo-electric, Electro-Magnetics, Ground Penetrating Radar (GPR), Geo-Magnetics.

Practical Training in Engineering Geology and Hydrogeology:

Small borings via direct push methods, description of recovered soil samples/soil profiles, installation of piezo-meters, levelling of piezometers, groundwater sampling, field parameters, pumping tests, measurement of piezometric heads, generation of ground water isoline plots. Surface water sampling in the field, determination of field parameters, quantitative analysis of major anions and cations as well as organic compounds in the laboratory (IC, AAS), calculation of ion balance, evaluation of plausibility and quality of water analyses, typing due to classification schemes.

Contaminant Hydrogeochemistry: Occurrence and classification of organic contaminants in soil and groundwater; physicochemical parameters; distribution equilibria (Henry, Kow, Kd, Koc concepts); sorption isotherms; sorption kinetics; diffusion; contaminant transport in groundwater; non-aqueous phase liquids; site investigation methods; site remediation approaches.

Hydrogeochemistry: Ionic species in groundwater; ion balance; activity; solubility product; dissolution of gases in waters; the carbonate system; redox reactions; classification of waters; water chemistry and geological formations; evolution of water chemistry; presentation and interpretation of groundwater analyses; Schoeller and Piper diagram; hydrochemical calculations using PHREEQC.

Hydrogeology: Water cycle, precipitation, evapotranspiration, runoff, atmospheric and riverine recharge, groundwater balance, methods for data regionalization, Darcy-flow basics and limits, steady state and transient flow, hydraulic potential, aquifer parameters, leakage, radial flow and pumping tests, regional groundwater flow, transport equation, diffusion and dispersion, retardation, groundwater chemistry.

Well Construction, Water Supply in Urban and Rural Areas:

Well borings, well materials, installation of casings and screens, pumps, well development, well aging and regeneration. Water Supply Systems: Water consumption, water resources, water works, water treatment, artificial groundwater recharge, groundwater ex-traction, case studies.

Geological Methods and Quaternary Geology:

Geological mapping, structural field measurements, section drawing, stereographic projection, soil and rock description, drawing of stratigraphic sections. Quaternary climate conditions, glacial stages, landscape development; glacial, proglacial and periglacial sediments; regional Quaternary geology of central Europe, subtropical and tropical regions; dating methods and stratigraphy.

Isotopes and Tracer Techniques:

Natural and artificial isotopes, stable isotopes, radiogenic isotopes, groundwater dating techniques. Types of tracers, application of artificial tracers in field tests, analysis of tracer breakthrough curves, tracer mixing models.

• Masters in Petroleum Geology and Geophysics

(Session: 2007 –2008, Exam held in 2010)

Result /Grade: First Class 2nd Position

Department of Geology, University of Dhaka, Bangladesh

Master's Thesis: Seismic Characterization and Modeling of Titas Gas Field for Deciphering Structure, Stratigraphy and Depositional Environment Using **Kingdom Software**.

This research was aided by William Greenwood Scholarship from AGID (Canada)

● Bachelor in Geology

(Session: 2003/2004 – 2006/2007, Exam held in 2009)

Result/Grade: First Class 3rd Position

Department of Geology, University of Dhaka, Bangladesh

Publications

● **Hossain, B.M.R.,** Woobaidullah, A.S.M. et al (2013): *Seismic Characterization of A2 and B3 Gas Sand of Titas Gas Field, Bangladesh for Future Hydrocarbon Prospect.*

International Journal of Earth Science and Engineering (IJE) Volume 06, February -2013 NO.1, Page- 68-75, ISSN 09745904. <http://cafetinnova.org/wpcontent/uploads/2013/02/000-INDEX-IJE-FEBRUARY-2013-issue.pdf>

● Chowdhury Quamruzzaman, **Hossain, B.M.R.,** et al (2012): *Ventilation shaft construction by conventional freezing method in Maddhapara Granite Mine, Bangladesh.*

IOSR Journal of Mechanical and Civil Engineering (IOSRJMCCE), ISSN : 2278-1684 Volume 2, Issue 4 (Sep-Oct. 2012), PP 07-13. <http://www.iosrjournals.org/>

● Farhad Howladar, **Hossain, B.M.R.,** Chowdhury Quamruzzaman. et al (2012): *Engineering Classification of Shari Ghat River Bed Sand and Prospect of its Utilization.*

International Journal of Scientific & Engineering Research, Volume 3, Issue 11, November-2012 <http://www.ijser.org/onlineResearchPaperViewer.aspx?Engineering-Classification-of-Shari-Ghat-River-Bed-Sand-and-Prospect-of-its-Utilization.pdf>

Technical Skills and Competences

- **Geological Softwares:** Reflexw (GPR), Seismodule (Shallow Seismic), Geodex (Microtremor), Kingdom (Seismic Interpretation), ArcGIS 10.1, ERDAS Imagine(Remote Sensing), SeisImager (Pickwin) (Shallow Seismic), Maq resistive (VES),
- **Operating System/Operating Environment:** Windows 8 / XP / Vista
- **Graphics & Multimedia:** Adobe Photo Shop
- **Office Systems:** MS-Word, MS-Excel, Power Point

Organizations Involvement

(1) Society of Exploration Geophysicist (SEG), Former Treasurer, University of Dhaka, Bangladesh.

(2) German Academic Exchange Service (DAAD) Alumni.