







Sandstone - red





AND ENVIRONMENTAL ENGINEERING

Opening Minds • Shaping the Future 啟迪思維・成就未來

Geology Laboratory

Room Z520, Block Z Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University



Introduction

The geology laboratory was established in 1974 and it was set up for teaching and research purpose. Owing to the needs of the industry and the expansion of research activities in the geotechnical engineering, geology laboratory provides material testing services and facilitated research projects to solve various geotechnical problems including soil rock slope and geotechnical design.

The Geology laboratory acquires different varieties of rock and mineral specimens, which are collected from Hong Kong, China and other countries for the training of students who are able to gain practical experience through rock and mineral identification.

The laboratory can also provide the training on map reading and aerial photo interpretation for studying landslides, landforms and structural geology for geotechnical engineering projects and fabricates thin section of rock samples for microscopic study of rock minerals.







Main Equipment



10 Inch Slab & Trim Lapidary Unit

Ten inch saws allow you to slice rock in pieces of rough up to about 3 inches in thickness into slabs.



The PetroThin Thin Sectioning System

The PetroThin Thin Sectioning System is a precise, easy-to-use instrument for re-sectioning and thinning a wide variety of samples, such as rocks and minerals for performing rocks and minerals characterization.



Polarizing Microscope

Polarized light microscopy can be used to examine rock structures and their optical characteristics. This method can also be used to identify minerals inside rocks.



Main Equipment



Ground Investigation Borehole Sampling Box

Students can learn Ground Investigation Borehole sampling techniques and field analysis of groundwater from this Borehole Sampling Box



Main Equipment



Biaxial compression machine

Four steel loading platens placed along the axial and horizontal directions. The load is applied by two sets of hydraulic oil pumps which is further connected to a Yshaped tube such that hydraulic pressure diverges to two separate tubes enabling pressure to be applied simultaneously to both ends of the specimen. The steel loading platens are installed on a sliding ray and thus travel freely on the tray during loading process. The loading is manually controlled at a rate of 0.0015kN/s. Two displacement transducers are attached to opposite edge of the platen to monitor the displacement with the applied load. All the loading and displacement records are transferred to and stored in a PC computer through a data logger.



Academic Staff



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The Geology Lab acquires Varies Rock specimens



The Geology Lab acquires Hong Kong Rock specimens





The Geology Lab acquires Igneous Rock, Sedimentary Rock, Metamorphic Rock and Fossil specimens



The Geology Lab acquires Mineral specimens



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The Geology Laboratory fabricates thin section of rock samples for microscopic study of rock minerals.





Rock Chip Thin Section

Petrographic analysis and rock identification



Benthic foraminifera in Limestone



Observation

Gastropod "G" coiled calcareous shell in Limestone



Bioclasts Photograph

Lath-shape plagiocla Diabase



Quartz fragment in Crystal Tuff



Polysynthetic twinning texture in Granite



Biotite in Granite

Geological Mapping



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Geological Investigation



O-type object Surface trace of fault Winged objects no stair steppin *ф***-type** 早心 ncohesive STRENGTH ataclasites 1 - 4 km complex objects (several sets of wings) BRITTLE ----Cohesive ataclasite DEPTH 4 - 10 km BRITTLE DUCTILE TRANSITION emperature 50 - 350 °C DUCTILE fault Swerrain Height against Boolugner Having (B) Ratio(Length/Width) against NE Locations Locations 200 100 Area 1A Area 1C1 Area 1C2 Area Area 4(Not Area 5 Area 3 4(Vein) Area 1A Area Area Area 3 Area Area Area 5 Vein) 1C1 1C2 4(Vein) 4(Not Location Vein) Location

Petrographic Analysis

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Biaxial loading machine

Loading capacity: 20 kN Sample size: no larger than 400 mm

Measurements: Displacement of platens via LVDTs and loading force via load cells, in both loading directions.

Additional measurements: Acoustic emission (AE) High-speed camera





Lab-in-charge and Technical Staff



Lab-in-Charge

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Opening Hours

Monday 8:45am – 12:30pm, 1:30pm – 5:45pm Tuesday to Friday 8:45am – 12:30pm, 1:30pm – 5:30pm (excluding Saturday, Sunday & public holidays)