Technical Skills & Knowledge in the Department of Earth Sciences

Earth Sciences carries out world-class research and teaching to understand how our planet works across diverse, multidisciplinary fields that ranges from understanding earth materials at the atomic level, through the geological processes that drive volcanoes and earthquakes.
This is enabled by our technical staff who are experts in their field and who possess a wide range of skill sets across three broad areas (below) that have been further adapted into specialising them to Earth Sciences' research laboratories.

- **Geology (Rock sample preparation, microscopy, laboratory/workshop techniques & management)**
- **Engineering (Mechanical, electronics, IT & design)**
- **Chemistry (Geochemical laboratory techniques, processes, analytical expertise & management).**

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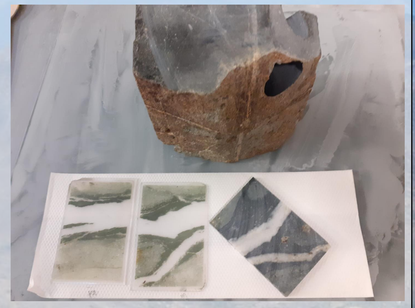
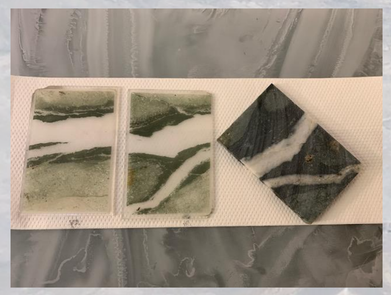
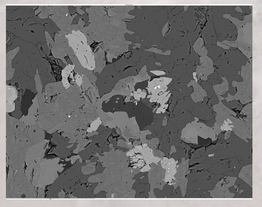
Jim Davy is our Geology member of Technical Staff and is the Manager of the Rock Prep Laboratory that produces thin sections of rock that are used in both traditional microscopy and in the Scanning Electron Microscope (SEM).



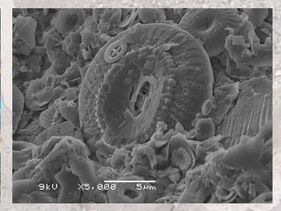


Jim Davy is also the Scanning Electron Microscope Laboratory Manager that produces stunning magnified images of rocks and fossils



Back Scattered Electron image of a rock thin section taken on the Departmental JEOL JSM6480 LV.

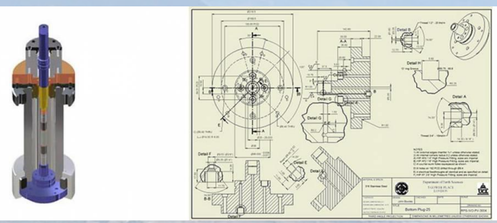
Traditional Photomicroscope image of the same thin section in cross polarised light.



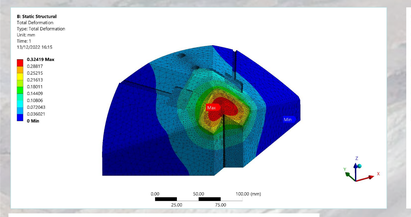
Secondary Electron image of a rock chip showing Coccolithophores of various sizes, (a type of Microfossil) taken on the Departmental JEOL JSM 6480 LV.

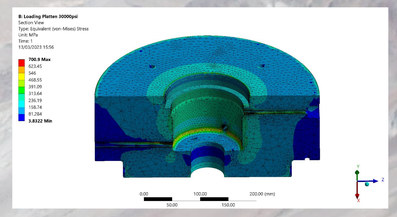
Neil Hughes, Ernest Samuel & John Bowles are our team of engineers (Mechanical & Electronic)

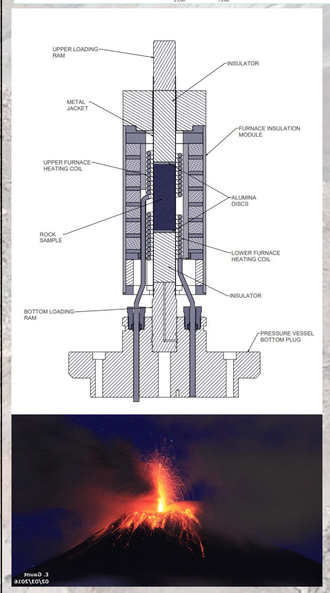
Our engineers design construct & commission various apparatus capable of determining the mechanical properties of geological materials under geological deformation conditions.



Design, development and manufacture of unique research experimental equipment that simulated geological conditions at great depth, which involved complex high pressure / high temperature and low temperature equipment, which can achieve pressures of up to 200, 000 P.S.I., and temperatures of up to 1600 degrees C, and down to - 90 degrees C.







Example of apparatus designed to study the mechanical properties of volcanic rocks at high temperatures and low pressures are key properties in the understanding of a range of volcanological problems, in particular lava flow dynamics. The measurement of these properties on extrusive volcanic samples under the appropriate pressure and temperature conditions has a direct application in the assessment of volcanic hazards.

Gary Tarbuck is our Technical Manager of the Geochemistry Laboratories

Geochemistry covers a wide spectrum of the Departments' research area, including Climate, weathering and CCS.

We design and setup experiments that replicate natural weathering processes, including the dissolution of silicate rocks, as demonstrated here, using the shaker table.