

# LASER-INDUCED BREAKDOWN SPECTROSCOPY (LIBS) ANALYSIS FOR REAL-TIME DOWNHOLE CHEMICAL ASSAY

## PHD PROJECT

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## RESEARCH PROJECT

This project will contribute to a broader effort within MinEx CRC to develop sensors that can be used for real-time analysis along the length a drill hole (downhole assay). The project will focus on the adaptation of Laser-Induced Breakdown Spectroscopy (LIBS) for analysis on a moving target and within media other than air (e.g. within water). Such analysis technology is currently used on the Mars Rover system where analysis is done at a distance of up to 7m from the target, however has not been adapted to an aggressive downhole environment.

The project will require a series of experiments that investigate optimisation of the current LIBS technology with validation done through geochemical and mineralogical analysis. The outcomes of the project may also have further implications on non-drilling exploration- and mining-based applications, e.g. real-time analysis of a decline mine wall or face-mapping.

