



Online course

# PROCESS MINERALOGY

**An introduction for metallurgists, mining and process engineers, and operators in the early stages of their career to useful process mineralogy tools and techniques.**

This course has been designed for mining industry professionals with no prior experience in process mineralogy (including metallurgists, mining engineers and operators). It will provide participants with a strong foundation that will allow them to extract maximum value from mineralogical data commonly used in diagnostics, troubleshooting and optimisation of mineral processing operations. The program provides a range of learning materials and activities that form the basis for skills development and application of these skills in practice.

Included in the course are strategies for selecting the most appropriate characterisation tools and assessing the quality of mineralogical data. Selected case studies and real data are used to demonstrate the benefits derived from appropriate mineralogical characterisation and show its applicability across the process chain.

## Course Objectives

By the end of this program, participants will be able to:

- Describe the basic components of ores and the linkage between texture, liberation and processing options
- Understand the tools available for providing mineralogical data and their advantages and limitations
- Analyse and interpret mineralogical data in a processing context
- Demonstrate the value of process mineralogy in plant diagnostics, troubleshooting and optimisation

CRICOS Provider Number 00025B



## Course outline

Online delivery of the course takes place over a period of eight weeks and allows participants to learn at their own pace.

Four learning modules will cover the following topics:

### What metallurgists need to know about minerals –

The properties of minerals and how they are classified, the use of calculation methods to convert elemental assays to mineral data (including trace elements) and examples of how the type of deposit impacts processing, with particular emphasis on mineral texture and liberation.

### Tools for characterisation –

Introduces the current suite of tools used in mineralogical characterisation, enabling participants to identify which tools to apply in what circumstances.

### Managing and using the data

– This module will focus on the application of data from automated-SEM based tools.

### Applying the skills, identifying opportunities and troubleshooting

– How to use mineralogical knowledge to analyse and interrogate data and diagnose the source of processing problems (i.e. ore or process).

## Program leaders

### Dr Elaine Wightman

Elaine is a senior research fellow and Postgraduate student coordinator at the Sustainable Minerals Institute's Julius Kruttschnitt Mineral Research Center. She specialises in process mineralogy and seeks to understand the contribution from the physical characteristics of particles to their behaviour during processing. Prior to joining SMI Elaine worked for Rio Tinto in what was then the Technical Services group. It was there that she first began working with automated mineralogical characterisation tools and gained experience with their application across a range of commodities.

### Dr Cathy Evans

Cathy is a senior research fellow at the Sustainable Mineral Institute's W.H.Bryan Mining & Geology Research Centre (BRC) She is a metallurgist with over 30 years experience in mineral processing. Prior to joining SMI, Cathy worked at mines in the Peruvian Andes and in Australia. Cathy brings a metallurgist's perspective to training industry professionals who are interested in applying modern process mineralogy techniques in their workplace.

### Course attendees

The course is designed to introduce metallurgists, mining and process engineers, and operators in the early stages of their career in the mining industry to useful process mineralogy tools and techniques.

No prior knowledge of mineralogy is required for this foundation course.

### Benefits to participants

As a participant, this online foundation course in Process Mineralogy will equip you to:

- Understand the importance of mineralogy in your process
- Identify the most appropriate mineralogical tools to answer your metallurgical questions
- Know how to make practical use of the data generated by automated mineralogy systems

## Register

Please visit the website:

[smi.uq.edu.au/profdev](http://smi.uq.edu.au/profdev)

### Contact us

If you have any queries about the Process Mineralogy Course, please contact us to discuss.

### Benefits to companies

Companies will benefit through developing staff who will be better equipped to:

- Diagnose and troubleshoot plant performance using mineralogical data
- Request appropriate mineralogical analysis for samples to obtain the most cost effective and timely solution
- Engage with the data from mineralogical characterisation



### Enquiries:

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