

THURSDAY 31 JANUARY 2019, 1PM-5PM  
The Geological Society of London

# UNDERSTANDING YOUR MINERAL DEPOSIT

Unlocking value and building resilience



**On Thursday 31st January we will be hosting a Seminar to share and discuss innovation in “Understanding Your Mineral Deposit” through the broad geometallurgical approach. The seminar will focus on mineral/waste characterisation to identify variability and allow the development of strategies to mitigate the associated risks. Companies that embrace the geometallurgical approach from an early exploration stage through to feasibility will benefit from increased NPV and shareholder value.**

The seminar is free to attend and will be relevant for exploration, mining and investment companies all looking to better understand the potential, and value, of a given deposit. We hope the insights will provide information about value adding methodologies and cost-effective tools now available to more confidently evaluate a deposit, build resilience, and help companies think differently about the earlier stages of the mine value chain.

The seminar will be held at the Geological Society of London, Burlington House, Piccadilly on the afternoon of the 31st January 2019 and will be immediately followed by the London Mining Sundowner which Grinding Solutions will be sponsoring.

## VENUE

The Geological Society of London, Burlington House, Piccadilly, London, W1J 0BD

## AGENDA

Start	End	Presentation Title	Presenter
13:00	13:30	Registration & Welcome Drinks	-
13:30	13:40	Introduction	Todd Houlahan @ Olympus
13:40	14:10	Geometallurgy - a route to unlocking deposit value	Dr Simon Dominy @ Uni of Exeter
14:10	14:40	Near real-time geoscience during drilling and sampling	Dr James Cleverly @ Imdex
14:40	15:10	Coffee break & Networking	-
15:10	15:40	Using portable XRF (pXRF) and portable XRD (pXRD) for rapid understanding of your mineral deposit	James Parker @ Olympus
15:40	16:10	Understanding the mineralogy toolkit to maximise value from mineralogical investigations	James Strongman @ Petrolab
16:10	16:40	Opportunities for Incorporating Metallurgical Investigations in Early Stage Exploration	Dr Klaas van der Wielen @ Grinding Solutions
16:40	16:50	Closing	Todd Houlahan @ Olympus
17:00	-	London Mining Sundowner The Kings Arms, Shepherd Market, Mayfair, W1J 7QA	Sponsored by Grinding Solutions

## KEYNOTE

Dr Simon Dominy, Visiting Associate Professor, Camborne School of Mines, UK

## TITLE

Geometallurgy - a route to unlocking deposit value

## ABSTRACT

Geometallurgy is an important addition to any evaluation project or mining operation. As an integrated approach, it unlocks value by establishing 3D models which enable NPV optimisation and more effective orebody management, while minimising technical and operational risk. Critically, through spatial identification of variability, it allows the development of strategies to mitigate the risks related to variability. Geometallurgy promotes sustainable development when all stages of extraction are performed in an optimal manner from a technical, environmental, and social perspective. To achieve these goals, development of innovative technologies and approaches along the entire mine value chain are being established. Geometallurgy has been shown to intensify collaboration among operational stakeholders, creating an environment for sharing orebody knowledge and improving data acquisition

and interpretation, leading to the integration of such data and knowledge into mine planning and scheduling. These aspects create better business optimisation and utilisation of staff, and lead to operations that are more resilient to both technical and non-technical variability. Geometallurgy encompasses activities that utilise improved understanding of the properties of ore and waste, which impact positively or negatively on the value of the product, concentrate, or metal. Properties not only include those that impact on processing efficiency, but also those of materials which will impact on other actions such as blasting and waste management. Companies that embrace the geometallurgical approach from an early exploration stage through to feasibility will benefit from increased NPV and shareholder value.

## PROFILE

Dr Simon Dominy is a geometallurgist whose career has included technical and leadership roles in mine operations, academia and consulting. He has extensive experience in orebody characterisation, sample protocol optimisation, resource development, resource estimation, bulk sampling/trial mining, metallurgical studies and grade control systems. Simon is currently Group Geometallurgist for Novo Resources Corporation and Principal Geometallurgist with Grinding Solutions Ltd.

# IMDEX

Dr James Cleverley, Global Product Manager - Geosciences

## TITLE

Near real-time geoscience during drilling and sampling

## ABSTRACT

In recent years consumer sensing devices have evolved to become highly connected technology, the building of the Internet of Things (IoT). For instance, a basic fitness tracker now synchronises automatically through your phone to present calculated information about your health via a web-based dashboard. This process requires sensor hardware, user interface, connectivity and analytics to turn data into information. The minerals industry is constantly faced with the dilemma of having to decide what to do without the information we need to support that decision, certainly not in the time we would like. This is the same problem whether it is drilling in Greenfields exploration, resource definition, grade control of blast holes or metallurgy of process feeds. In many cases the information we need at the time we need it is rarely available. So how can we make the reliable decision?

The process of drilling, and sampling, is a cycle. We drill to sample material, to measure properties of the material to decide what to do next. Geoscience data is typically the slowest data to be collected in this process. The decision to drill another hole is often made many weeks before the first assay data are back! IMDEX have developed software and hardware

solutions to not only speed up the time to collect assay data, but also provide secure chain of custody of that data in cloud architectures - putting the data where it is needed. Providing an end to end solution allows us to address issues with data quality and auditability, the management of the data collection and QAQC process and delivery of the data anywhere via cloud architectures. Using software like ioGAS™ and Leapfrog3D™ now allows the geoscientists to make an informed decision based on reliable, accurate and quality controlled data in near real-time.

This talk will show examples of the technologies that make this possible and how these are being implemented across the mining lifecycle. How technology and workflows can be used to address problems of data quality when using instruments like portable XRF and structural logging or making data available between business units within the mining industry. Using standardised real-time quality, reliable and auditable data can also facilitate much better use of analytics methods such as Neural Networks and AI to turn the mass of data into information. Information that is needed to support the decisions we need when we need them.

## COMPANY PROFILE

IMDEX is a global mining equipment, technology and services - or METS - company. Our IMDEX solution sets improve the process of identifying and extracting what is below the earth's surface for drilling contractors and resource companies - we let clients know where it is and what it is, now. Our company delivers these solution sets, which include: Drilling Optimisation; Downhole Navigation; Structural Geology; In-Field Geoanalysis; and Driller Operable Geophysics, to the global minerals industry and targeted non-mining applications via our leading REFLEX and AMC brands.

# OLYMPUS

James Parker, XRF Specialist

## TITLE

Using portable XRF (pXRF) and portable XRD (pXRD) for rapid understanding of your mineral deposit

## ABSTRACT

The talk will discuss real examples using pXRF and pXRD in exploration and mining scenarios where customers have used these technologies to gain better understanding of specific aspects of their mineral deposit. Focus will be given to best practice application of pXRF to achieve quantitative geochemistry results during exploration and mining phases. Discussion will also be provided on

lithochemical and stratigraphic applications of pXRF technology and connectivity with common mining and exploration software packages. A brief overview will also be provided on the application of pXRD in exploration and mining scenarios where mineralogical identification can facilitate better understanding of deposits and be used to optimise metallurgical recoveries.

## COMPANY PROFILE

Olympus provides an industry-leading portfolio of X-ray Fluorescence (XRF) and X-ray Diffraction (XRD) Analyzers for a range of applications in mineral exploration, underground and open cut mining, mineral processing, commercial and on-site laboratories and for environmental remediation projects. Our focus on long term partnerships in the minerals industry, field experience and emphasis on best practice, ensures we enable our customers to achieve fit-for-purpose, decision-quality data. Our revolutionary Vanta significantly advances handheld XRF technology via its key features of Ruggedness, Connectivity, Stability and Precision.

For further information visit: [www.olympus-ims.com](http://www.olympus-ims.com)

# PETROLAB

James Strongman, Director

## TITLE

Understanding the mineralogy toolkit to maximise value from mineralogical investigations

## ABSTRACT

Mineralogy provides a fundamental dataset and common language through all stages of a deposit's life cycle from early stage exploration through to development, extraction and finally remediation. The advancement of process mineralogy, both in terms of speed of analysis and resolution, but also the ability to correlate data from multiple sources and data sets, means that Petrolab now has the ability to really increase the integration and value of mineralogical analysis. Once minerals of interest have been identified, a more focused approach can be taken to measure the key metrics for that mineral

and therefore build an improved understanding of value and risk for the deposit's lifecycle. This is achieved through utilising a "best tool for the job" approach to the mineralogy toolkit and further to that, to use it more efficiently to generate robust and targeted datasets. The generation of data is only part of the story and making the data accessible and easy to integrate with deposit models and plant databases is crucial to extracting and utilising the mineralogical metrics. This talk will cover some of the developments Petrolab and its partners have made in this field.

## COMPANY PROFILE

Petrolab provides technical support services to the mining, minerals processing and materials industries worldwide and has been operating for over 20 years.

Specialists in the mineralogical investigation of rocks, mineral resources and manufactured inorganic materials by microscopic analysis. High quality interpretative reports help clients evaluate the potential of their mineral resources and solve materials related problems.

We have close links with the high concentration of local companies offering world class expertise in the mining and minerals processing industries. Please contact us to discuss your requirements and for a specific quotations.

For further information visit: [www.petrolab.co.uk](http://www.petrolab.co.uk)

# GRINDING SOLUTIONS

Dr Klaas van der Wielen, Senior Metallurgist

## TITLE

Opportunities for Incorporating Metallurgical Investigations in Early Stage Exploration

## ABSTRACT

Given the high costs of exploration drilling, availability of sample for metallurgical testing, especially in the early stages of a project, can be minimal. That said, establishing appropriate links between metallurgy and geology as early as possible can help direct further exploration efforts to get the best understanding of deposit variability as soon as possible and provide savings for the duration of the exploration project. Early stage characterisation enables the progressive implementation of the geometallurgical approach to life of mine optimisation.

Grinding Solutions have a number of innovative tools available that can help provide indications of

the metallurgy of a deposit based purely on thin sections and other data available from geological investigations. Amongst these tools are methods to aid sampling accuracy, image-based simulation of mineral liberation to determine target grind size without having to do any physical grinding, and use of process mineralogical data to establish theoretical and realistic grade and recovery targets.

This presentation will showcase some of the key metallurgical simulation tools relevant to the exploration market, and highlight the value they can add through case-studies.

## COMPANY PROFILE

Grinding Solutions place our clients at the forefront of what we do. Our ethos is to reduce mining and processing costs as well as the environmental impact whilst maximising value for our clients. We offer a wide range of mineral processing testing and consultancy services from our 1,500m<sup>2</sup> laboratory facility based in Cornwall, UK. We are industry experts and world leaders in fine grinding and have in recent years been applying our innovative and consultative approach to areas including process mineralogy, flotation and gravity separation.

Helping our clients increase their profitability and environmental credentials by driving down costs, reducing energy consumption and increasing grade and recovery is at the core of what we do.

For further information visit: [www.grindingsolutions.com](http://www.grindingsolutions.com)

**OLYMPUS**

---

**OLYMPUS SCIENTIFIC SOLUTIONS**

KeyMed House, Stock Road, Southend-on-Sea, Essex, SS2 5QH, United Kingdom

Tel: +44 (0)1702 616333 | [www.olympus.co.uk](http://www.olympus.co.uk)