

7th

Mintek and SASS Analytical Science Symposium

Innovative Analytical Methodology in the Mining & Metallurgical Industry

Friday 3rd November 2017 | Mintek Auditorium

Symposium Programme

Programme Director – (Mintek) Ms Sandra Graham

MORNING

07:30 - 08:30	Registration (Tea / Coffee)
08:30 - 08:40	Opening and Welcome <i>Mintek President & CEO</i>
08:40 - 08:50	Message from SASS <i>Chairperson</i>
08:50 - 09:00	Auditorium Orientation <i>Ms Sandra Graham</i>
Presenter's Session 1	
09:00 - 09:30	Title: <i>Yesterday, to-day, to-morrow and the South African contribution:</i> Plenary Presenter: Dr Ed Kable;
09:30 - 10:00	Title: <i>Lean implementation in the analytical services division-assessment of progress:</i> Presenter: Mr Josiah Mdhuli;
10:00 - 10:30	Title: <i>Hand held X-ray fluorescence analyses of wet PGM concentrates:</i> Presenter: Ms Chantelle Engelbrecht;

10:30 - 11:00 Mid-Morning Refreshments

Presenter's Session 2

11:00 - 11:30	Title: <i>Analysis of gold in dump material:</i> Presenter: Mr Sandile Langa;
11:30 - 12:00	Title: <i>A comparison of different methods for accurate quantification by ICP-MS – The case of elements in soil:</i> Presenter: Dr Angelique Botha;
12:00 - 12:30	Title: <i>Sequential copper analysis of a Tschudi-phase 2 fresh rock (sulphide) copper sample:</i> Presenter: Ms Hlengiwe Thandekile Mnculwane;
12:30 - 13:00	Title: <i>Spectrometric techniques for analysis of Zr and Hf in zircon mineral:</i> Presenter: Dr Motlalepula Nete;

13:00 - 14:00 Lunch

AFTERNOON

Programme Director – (SASS) Dr Johann Fischer

Presenter's Session 3

14:00 - 14:30	Title: <i>An evaluation of chromatographic modes for the determination of rare earth elements in geological materials by HPLC-ICP-MS:</i> Presenter: Ms Risa Bagwandeen
14:30 - 15:00	Title: <i>Thin film deposition of metal sulphide and metal oxide layers with and without polymer intercalation by using chemical bath deposition technique:</i> Presenter: Ms Happy Mabowa;
15:00 - 15:30	Title: <i>The classification and labelling of chemicals and substances in terms of the GHS and SANS 10234:</i> Presenter: Mrs Belinda Berry
15:30 - 15:40	Closing <i>Mr Alan McKenzie, Mintek GM: Technology</i>
15:40 - 15:50	Vote of Thanks <i>Mr Joe Baloyi, Manager: ASD</i>

15:50 - 17:00 Refreshments and Networking

SESSION 1

(Click on the presenter's name for more detailed information)

SESSION 2

(Click on the presenter's name for more detailed information)

SESSION 3

(Click on the presenter's name for more detailed information)

For further
information
Contact

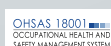
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DIRECTIONS TO MINTEK



SESSION 1

MORNING

09:00 - 09:30

Title: *Yesterday, to-day, to-morrow and the South African contribution:*
Plenary Presenter: Dr Ed Kable;



Dr Ed Kable

Abstract:

The development of analytical chemistry since ancient times will be reviewed.

From historical evidence it is concluded that fire assay had its origins in Ancient Minor in the third millennium BC. However, it was only with revival of learning in the middle ages that the art of fire assay was documented (Agricola, 1556).

09:30 - 10:00

Title: *Lean implementation in the analytical services division-assessment of progress:*
Presenter: Mr Josiah Mdhuli;



Mr Josiah Mdhuli

Abstract:

The Analytical Services Division (ASD) underwent major changes between 2014 and 2016 in order to implement a lean approach to laboratory management. New labs were constructed with the aim of streamlining processes in order to minimise waste and increase efficiency.

Previously ASD operations were conducted in 8 levels and this posed many challenges for planning work, supervision and the general flow of work among others.

After the completion of the labs in Jun 2016, all operations of the Divisions were accommodated in two levels

10:00 - 10:30

Title: *Hand held X-ray fluorescence analyses of wet PGM concentrates:* Presenter: Ms Chantelle Engelbrecht;



Ms Chantelle Engelbrecht

Abstract:

This investigation was to determine the chromium content in wet concentrates, as received, using a Hand Held X-Ray Fluorescence (HHXRF). PGM Concentrate containing high chromium concentrations are known to influence the smelting process and impact on the matte and slag separation. It will lead to increased operating temperatures; reduced operating capacity and shorten the life of the furnace. It is therefore critical to determine

10:30 - 11:00

Mid-Morning Refreshments

SESSION 2

MORNING

11:00 - 11:30

Title: *Analysis of gold in dump material:* Presenter: Mr Sandile Langa



Mr Sandile Langa

Abstract:

Increasingly, gold dump material is used as a low-grade resource for further processing. This creates analytical challenges, as the methods used must be able to clearly and reproducibly distinguish between head grades of significantly less than 1g/t and tailings which may be around 0.1g/t. A potential complication is that broken carbon, from the original processing of the ore, may be present in the samples and this could cause a "nugget" effect in the sample from the loaded carbon.....



SESSION 2 (continued)

11:30 - 12:00

Title: A comparison of different methods for accurate quantification by ICP-MS – The case of elements in soil:
Presenter: Dr Angelique Botha;



Dr Angelique Botha

Abstract:

.....with a special focus on soils to support UP projects in the field of veterinary geology for the One Health Platform. In view of this activity the NMISA participated in an international collaborative study on elements in soil in 2015. Based on the results obtained in the comparison study the NMISA have done more experimental work to eliminate biases found in the results for some of the elements. The quantification techniques of external calibration and standard addition in combination with gravimetric preparation of samples and standards, internal standardisation and serial dilution was compared with isotope dilution analysis using inductively coupled plasma sectorfield mass spectrometry (ICP-SFMS).....

12:00 - 12:30

Title: Sequential copper analysis of a Tschudi-phase 2 fresh rock (sulphide) copper sample:
Presenter: Ms Hlengiwe Thandekile Mnculwane;



Ms Hlengiwe Thandekile Mnculwane

Abstract:

.....A Tschudi phase 2 fresh rock (sulphide) Cu sample was evaluated by particle size distribution and also tested for homogeneity.

Different diagnostic leach methods for different Cu ores including acetic acid soluble, acid soluble, cyanide soluble, ferric soluble and residual/total soluble Cu were performed. The results were then compared with modal analysis. Many replicate analyses were performed and analysed statistically. This indicated the sample homogeneity plus the method repeatability as it is difficult to tell if unsatisfactory results come from the sample representability, the method robustness, or both.....

12:30 - 13:00

Title: Spectrometric techniques for analysis of Zr and Hf in zircon mineral:
Presenter: Dr Motlalepula Nete;



Dr Motlalepula Nete

Abstract:

Several methods exist for analysis of geological samples. However, only very few reports document the accuracy of solid analysis techniques such as Glow discharge optical emission spectroscopy (GD-OES) and scanning electron microscope-energy dispersive spectroscopy (SEM-EDS).¹ This study investigated the possible development of analytical techniques using RF-GD-OES and the ability of SEM-EDS to analyze non-conducting geological materials such as zircon. The GD-OES and SEM-EDS results were compared with those obtained from ICP-OES analysis.....

13:00- 14:00 Lunch

SESSION 3

AFTERNOON

14:00 - 14:30

Title: An evaluation of chromatographic modes for the determination of rare earth elements in geological materials by HPLC-ICP-MS: **Presenter:** Ms Risa Bagwandin



Ms Risa Bagwandin

Abstract:

.....This study investigates established chromatographic modes of REE separation on their capability to separate individual REE and sample matrix components without sample pre-treatment. It further aims to evaluate the potential of these chromatographic methods to be integrated to a hyphenated HPLC-ICP-MS technique for elimination of interferences which affect ICP-MS REE quantification. Ion pair and ion exchange methods were optimised using HPLC with post-column derivatisation and UV-Vis detection. These methods were compared on the basis of their REE separation efficiency and capability to address ICP-MS spectroscopic interferences that affect REE determination.....

14:30 - 15:00

Title: Thin film deposition of metal sulphide and metal oxide layers with and without polymer intercalation by using chemical bath deposition technique: **Presenter:** Ms Happy Mabowa;



Ms Happy Mabowa

Abstract:

A well adherent thin film of ZnO, ZnS, CdO and CdS has been deposited on silica glass substrates from basic baths by chemical bath deposition (CBD), followed by multilayer deposition of metal oxide/metal sulphide (MO/MS) and metal sulfide/metal oxide (MS/MO) this was followed by intercalation with polyvinyl alcohol (PVA). CBD was used for the deposition of the thin films. SEM micrograph of the as-deposited ZnS, ZnO, CdO, and CdS thin film, show the film to be uniform, dense, homogeneous at lower temperatures and composed of large irregular shaped grains that are scattered at higher temperatures.....

15:00 - 15:30

Title: The classification and labelling of chemicals and substances in terms of the GHS and SANS 10234: **Presenter:** Mrs Belinda Berry



Mrs Belinda Berry

Abstract:

The paper aims to outline the summary of the GHS in South Africa in terms of legal requirements as well as a summary of the classification requirements for chemicals, substances (mixtures, products) and wastes.

The Paper will cover the following topics:

- Legislative status of GHS in South Africa and global implementation
- Introduction to GHS (Purpose)
- The structure and details in each section of the 16-point SDS
- Basics Classification examples and calculations
- Labelling requirements
- GHS vs Transport requirements
- Using Software to assist with the classification process

15:30 - 15:40

Closing Mr Alan McKenzie, Mintek GM: Technology

15:40 - 15:50

Vote of Thanks Mr Joe Baloyi, Manager: ASD

15:50 - 17:00

Refreshments and Networking

7th

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Posters

Additional Information	
1:	Title: <i>Lean management: Mr Nehemiah Mukwevho</i>
2:	Title: <i>Waste management: a compliance to Globally Harmonized System: Ms Zizile Mhlambi-so and Ms Lovia Matabane;</i>
3:	Title: <i>The Determination of iodine number of activated carbon: Ms Hlengiwe Thandekile Mnculwane;</i>

Registration Packages

Early Bird:	Ends on 30 September 2017 – R930
Regular:	Starts on 1 October 2017 – R1000
Students:	R840 (proof of student registration to be emailed or faxed)
SASS Member:	R880

Closing date for Registrations

Closing date for Regular, Student & SASS Member Registrations is Wednesday, the 25th of October 2017

[Click here to Register Online](#)

<http://www.mintek.co.za/technical-divisions/analytical-services-asd/analytical-science-symposium-registration-form/>

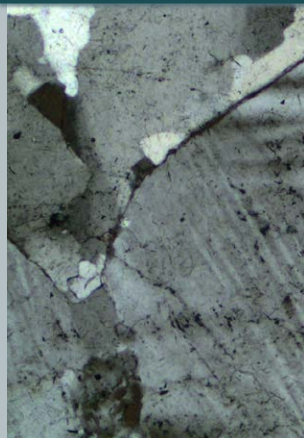
Registration Form

If you do not wish to register online please complete the Registration Form on [page 6](#) and send to: dhiroshneeg@mintek.co.za or claram@mintek.co.za or fax to +27 11 709 4006

Exhibitions

Exhibitors are welcome

Price per stall:	R3 460.00 excl. VAT.	Closing date for booking a space:	25 October 2017
Stall package:	<p>Floorspace of about 2m x 2m will be provided for your displays. Included in the package is a standard trestle table with a Mintek table cloth, two chairs and access to the symposium presentations on the day.</p> <p>Also included is lunch and refreshments for <i>two people only</i>.</p>		



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ISO 17025
TESTING AND CALIBRATION LABORATORY

OHSAS 18001
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

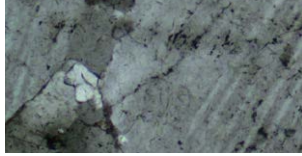




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Closing date for Registrations

Closing date for Regular, Student & SASS Member Registrations is Wednesday, the 25th of October 2017



Please complete the registration form below on and send to:
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Registration Form

Name											
Surname											
Title / Designation <i>(circle the correct option)</i>	Prof	Dr	Ms	Mrs	Mr						
Company											
VAT Number											
Address											
Email											
Contact Details	Landline:	()				
	Cell:	()					
Dietary Requirements <i>(circle the correct option)</i>	Kosher	Halaal	Vegetarian	Vegan							
Please circle the relevant option	Delegate	Student	SASS Member								
<i>If you are a student, please provide your</i>	Student No:										



MAP & DIRECTIONS TO MINTEK

PHYSICAL ADDRESS: 200 Malibongwe Drive, Strijdom Park, Randburg

GPS COORDINATES: 26° 5' 20.3 "S 27° 58' 49.81

DIRECTIONS FROM: N1 and N1 Western Bypass

1. Drive on the N1 towards Johannesburg
2. At the Buccleuch interchange (104), keep left and follow the sign N3 Germiston/Durban
3. Keep right at the fork, following the sign
4. Roodepoort/Bloemfontein/N1 and merge onto N1 Western Bypass
5. Take the Malibongwe Drive offramp (R512/Randburg),
6. Turning left into Malibongwe Drive
7. Turn right into Mintek (200 Malibongwe Drive)

DIRECTIONS FROM: M1 Johannesburg

1. Take exit 14B for Saint Andrews Road toward Parktown/Johannesburg
2. Turn right into St Andrews Rd
3. Turn right into Jan Smuts Ave and drive along Jan Smuts Ave until you reach Republic Rd
4. Turn left into Republic Rd
5. Turn right into Malibongwe Dr
6. Turn left into Mintek (200 Malibongwe Drive)

