



ISO 9001 ■■■■  
QUALITY  
MANAGEMENT SYSTEM

ISO 14001 ■■■■  
ENVIRONMENTAL  
MANAGEMENT SYSTEM

ISO 17025 ■■■■  
TESTING AND CALIBRATION  
LABORATORY

OHSAS 18001 ■■■■  
OCCUPATIONAL HEALTH AND  
SAFETY MANAGEMENT SYSTEM



**MINTEK, together with SASS,  
invites you to  
the Annual Symposium  
where analytical knowledge  
in the mining industry  
is shared and  
communicated**

*Welcome to*

**the 5<sup>TH</sup> Mintek Analytical  
Science Symposium**

**"QUALITY IN  
ANALYTICAL  
CHEMISTRY"**

**30<sup>th</sup> October 2015**

**MINTEK,**

**G4, Conference Centre**

# PROGRAMME

## MORNING SESSION:

Programme Director – Mr Graham Sithole

07.30-08.25	<b>Registration (Tea/Coffee)</b>
08.30-08.40	<b>Opening and Welcome - Mr Abiel Mngomezulu</b>
08.45-08.55	<b>Message from SASS - Prof Rob McCrindle</b>
09.00-09.25	<b>Celebrating 20 years of ISO17025 accreditation - Ms Sandra Graham and Ms Mpendulo Ginindza</b>  <i>In 2015 the Analytical Services Division of Mintek celebrated 20 years of unbroken ISO17025 accreditation. This has not always been an easy journey, but one worth taking. ASD initially implemented what was known as the ISO/IEC Guide 25 in 1995. ASD has travelled the journey of ISO/IEC 17025 accreditation since it was initially issued by the International Organization for Standardization in 1999. Laboratories that are accredited to this international standard have demonstrated that they are technically competent and able to produce precise and accurate test and/or calibration data. ASD has built capabilities to show this over the past 20 years. This report reflects on the 20 year journey, which has encompassed not only changes to the standard, but also changes in the operation and focus of the laboratory.....</i>
09.30-09.55	<b>Latest developments in the guidance available for the users of reference materials - Dr Angelique Botha</b>  <i>ISO/REMCO, the ISO Committee on Reference Materials, has actively been updating its guidance documents over the past five years. Since the publication of the third edition of ISO Guide 34 in 2009, the work of the committee has focussed on the development of up to date guidance for the users of reference materials.</i>  <i>In 2014, ISO Guide 80, a guidance document for the in-house preparation of quality control materials (QCMs) was published by the committee. QCMs are mostly used to monitor laboratory methods that have already been validated to be able to detect change or when a method goes out of statistical control. QCMs are RMs and as such have to be sufficiently homogeneous and stable for the intended use.</i>  <i>The third edition of ISO Guide 33, 'Reference materials – Good practice in using reference materials' was published early in 2015. The previous edition focussed on the use of certified reference materials. The new edition makes an effort to include all types of reference materials and their uses.....</i>

10.00-10.25



**Quality Control and traceability; the guarantee for reliable product in Cement Manufacturing**  
- Ms Maggi Loubser

*Concrete is the most used material on earth and the essential ingredient is cement. As the construction industry developed in level of sophistication in design and engineering, the demands placed on cement manufacturers increased. Today complex mix designs are used to prepare a concrete for a specific application and the client demands consistency and strength performance from the cement. In the production of cement it is the manufacturer's task to ensure that the properties of cement are kept at a certain level, with variations as small as possible to meet the standard specifications and to comply with the demands and needs of the market. This implies that variability in material composition and processing throughout the manufacturing process must be minimised.....*

10.30-11.00

**Refreshments**

11.05-11.30



**Getting to Grips with Sampling** - Dr Johann Fischer

*A lot of fuss is made about method validation and calculating the uncertainty of measurement, however sampling error can amount to 100 or 1000 times the analytical error. Nobody wants to take accountability for sampling and just assumes the sample is representative. Typically nobody knows how to sample correctly because this was never part of their formal training. The aim of this presentation is to introduce the Theory of Sampling (TOS) which has been in existence for 25 years! Along the way we will deal with concepts like: the CORRECT sampling process, the Fundamental Sampling Principle, Sampling errors and Heterogeneity issues. We will teach you that nothing good has ever come from grab sampling and discuss how to extract samples keeping in mind that mass reduction in the lab has to obey the same rigorous sampling principles. The 7 Sampling Unit Operations will be introduced and few examples will be shown.*

11.35-12.00



**Application of handheld EDXRF for Determination of La, Ce, Y, Nd and Pr in a chloride medium** - Ms Happy Chiloane

*Mintek has launched and commissioned its REE pilot plant. From an analytical perspective, the control of the plant requires a fast, simple and accurate quantitative method for REEs analysis that ideally does not require any sample preparation.*

*Mintek acquired a handheld EDXRF spectroscopy that was used for the quantification of REE such as La, Ce, Pr, Nd and Y. The experimental work undertaken in the study was conducted to evaluate if these individual REEs could be analysed within the concentration range of 100 to 10 000 mg/L in chloride solutions.*

*The EDXRF results showed good correlation to results obtained via ICP-OES Spectroscopy; the latter method...*

12.05-12.30



**Reference Materials as Crucial Tools for Quality Control and Assurance in Analytical Chemistry - Ms Nozibele Mbangula**

*Reference Materials as crucial tools for quality control and assurance in Analytical Chemistry - Reference materials have always been used for assay lab quality control (QC) and quality assurance (QA), but their use has increased and been more prominent following tightening of various codes, legislation and regulations worldwide. Major influences in the uncertainty of certified values are discussed and possibilities to enhance the availability and fitness for purpose of Reference Materials as well as their proper use are indicated.....*

12.30-13.25

**LUNCH**

**AFTERNOON SESSION:**

**Programme Director – SASS Member**

13.30-13.55



**Root cause analysis – A critical QA/QC tool in an Analytical Laboratory - Mr Robson Lokothwayo**

*Root cause analysis (RCA) is a quality assurance and quality control tool that takes an objective approach to problem solving methods aimed at identifying the root causes of problems or incidents without necessarily using additional resources. It holistically evaluates safety, environmental, quality, reliability and all process factors that may have had an impact on the event that resulted in a non-conformances or problems so as to eradicate/ minimise recurrence. In addition, it can effectively and accurately identify the exact causes rather than focusing on the most visible causes.*

*Root Cause analysis is the vital and most difficult step in the corrective action process; consequently the most challenging to most analytical laboratories. The limitation of RCA is that the outcomes of any single lab RCA have limited external validity (i.e., the results cannot be generalized to other analytical laboratories) since RCA studies are often site-specific and therefore it is a must for all accredited laboratories.....*

14.00-14:25



**The Application of ANOVA and Bonferroni post-hoc t-tests in the Comparison of Analytical Data from Four Laboratories on a Chromite Concentrate - Mr Allan Fraser**

*In establishing the final purchase price, mining companies supplying chromite concentrate to buyers will typically have a sample of the concentrate analysed by a referee laboratory to confirm the Cr<sub>2</sub>O<sub>3</sub> content. The sample taken is also analysed by the mine laboratory for comparison with the analysis result obtained by the referee laboratory and often two or three additional laboratories may also participate. As there is uncertainty in all analytical measurement it would be expected that there would be differences in the means on a sample analysed by the different laboratories. Typically, the result of the referee laboratory is taken as the value of the consignment and the mining company pays penalties on any differences. This approach is very subjective and could result in the mine paying unnecessary penalties and losing valuable revenue. This is because a valid decision cannot be made based on a single result alone and all analysis is conducted to make an informed decision.*


*Therefore an objective statistical test is needed to determine...*

14.30-14:55



**PipetMax: Maximising Accuracy, Consistency, Versatility and Reproducibility - Mr Barend Jansen van Vuuren**

*Consistency, reproducibility and traceability are absolute necessities when aiming to produce quality, publishable data. Expanding current knowledge relies on making assumptions from published conclusions. Thus, a dependence on the verifiability of the science is created. In today's global community this is especially true, where collaborations on scientific projects are becoming more prevalent. Research is constantly shared and redistributed between a variety of research labs, calling for greater trust in the accuracy and validity of the data. Method standardization utilizing validated reagents and protocols is fast becoming the norm. The Gilson Pipetmax automated liquid handler presents an easy to use pipetting platform that facilitates the generation of incontrovertible data through accuracy and precision. Laboratories utilizing the Pipetmax for various applications, from enzyme assays, quantitative polymerase chain reactions to next generation sequencing library preparation have observed that cross-contamination between samples is minimized. Simultaneously an increase in the accuracy, consistency and reproducibility of the data was reported. Tedious, inefficient and time consuming manual sample preparation was negated, leading to lower procedural errors and operational costs. Although intended to corner the market, the Gilson Pipetmax cuts no corners when it comes to the quality of the data that is generated.*

<p>15.00-15:25</p> 	<p><b>The power of a Synchrotron in your laboratory utilizing FTIR Spectroscopy - Mr Len Snyder</b></p> <p><i>Presenting IR Imaging analysis conducted on Polymer Laminates, Identifying defects in the laminates, Live cell imaging in water, Electronics defects analysis, Breast Carcinoma tissue and pharmaceutical contamination.....</i></p>
<p>15.30-15.40</p>	<p><b>Closing - Mr Alan McKenzie</b></p>
<p>15.45-15.55</p>	<p><b>Vote of Thanks - Mr Joe Baloyi</b></p>
<p>16.00-18.00</p>	<p><b>Cocktail (non-alcoholic) and networking</b></p>

# REGISTRATION

**Early bird:** Ends 1 September 2015 – **R750**

**Normal registration:** Starts 2 September 2015 – **R850**

**Students: R650** (*proof of student registration to be emailed or faxed*)

**SASS Member: R730**

**Registration online:**

<http://41.76.213.90:81/mintekregistrationform/RegistrationForm.php> for the symposium

registration-form via Mintek website (www.mintek.co.za) or alternatively, complete the attached form and send to email (see contact) or fax to +27 11 709 4006

**Closing date for registration:  
26 October 2015**

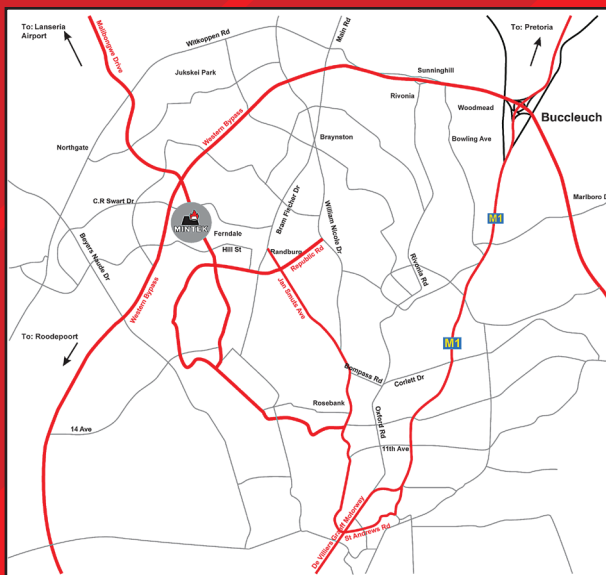
# EXHIBITION STALLS

**EXHIBITORS:** A space of about 2m x 2m floor space will be provided for your displays, table with standard, MINTEK table cloth, two chairs and entrance into the symposium presentations with luncheon and refreshments for two people only.

**Price per stall: R3 070 excl. VAT.**

**Closing date: 26 October 2015**

**Directions to Mintek: 200 Malibongwe Drive, Randburg**



**GPS Co-ordinates: 26° 5' 20.3 "S 27° 58' 49.81 "E**



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# ANALYTICAL SCIENCE SYMPOSIUM REGISTRATION FORM

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NAME:

SURNAME:

DESIGNATION / TITLE:

COMPANY:

ADDRESS:

VAT NUMBER:

EMAIL ADDRESS:

CONTACT DETAILS:

DIETARY REQUIREMENTS:

DELEGATE:

STUDENT:

STUDENT No.:

(Fax Proof of Registration to Number Below)

SASS MEMBER:

SASS MEMBER No.:

**SUBMIT**