

# PLATINUM 2013 — PRELIMINARY PROGRAMME

## 18 September 2012—Tuesday

07:00–08:00 Registration & early morning refreshments

### Session 1

**Session Chair: R.T. Jones**

08:00–08:10 **SAIMM Opening Address**

G.L. Smith, *President, SAIMM*

08:10–08:40 **Keynote Address:**

C. Griffith, *Anglo American*

08:40–09:10 **Keynote Address:**

J. Koolen, *Independent Strategy Consultant*

### Session 2—Marketing

**Session Chair: S. Forrest**

09:10–09:35 **Trends in the catalytic converter industry: Implications for PGM usage**

D. Vanoppen, *BASF*

09:35–10:00 **Heraeus filling the precious metal niche**

Ms C. Viviers, *Heraeus*

10:00–10:25 **Ruthenium and iridium. Strategic metals for tomorrow**

A. Cowley, *Johnson & Matthey*

10:25–10:50 **Mid Morning Refreshments**

### Session 3A—Mining

**Session Chair: A. Widlake**

10:50–11:15 **Sponsor Presentation: Sandvik, A. Lewis**

11:15–11:40 **Optimisation of mechanised mining layout within Anglo American Platinum**

P. Valicek, F. Fourie, G. Krafft, and J. Sevenoaks

11:40–12:05 **Case Study: Using software optimisation techniques for the optimal allocation of equipment in a mechanised underground mining environment**

D. Kok and G.R. Lane, *Cyest Corporation*

12:05–12:30 **Mechanised bolting—onboard drilling automation and a change in the support regime in mechanised mining**

A. Marek, S. Thorley, B. Ghore, and A. Comorge, *Sandvik*

### Session 4A—Mining

**Session Chair: J.G. Taylor**

12:30–12:55 **A conceptual study into optimizing the delivery of trackbound twin ends through trackless mechanized development**

D. Nardini, M. Andrews, and G. Brooks, *Sandvik*

12:55–13:20 **The Age of Intelligence—Online diagnostic and automated maintenance planning**

A. Marek, H. Haubmann, and S. Thorley, *Sandvik*

13:20–13:45 **Mine Development—Access to deposit**

S.M. Rupprecht, *University of Johannesburg*

13:45–14:25 **Lunch**

### Session 5A—Safety, Health, Environment

**Session Chair: L. Zindi**

14:25–14:35 **Sponsor Presentation: Read Swatman & Voigt**

14:35–15:00 **Towards benchmarking of safety performance in the platinum sector**

B. Genc and T.R. Stacey, *University of the Witwatersrand*

15:00–15:25 **Hydrogeological properties of the UG2 Pyroxenite Aquifers of the Bushveld Igneous Complex**

R. Gebrekristos\* and P. Cheshire†, *\*Digby Wells Environmental and †Groundwater Monitoring Services*

15:25–15:50 **Is water conservation and water demand management a real option?**

F. Botha\* and K. Chetty†, *\*Praxos and †Lonmin plc*

15:50–16:15 **Mid afternoon refreshments**

**Session 6A—Safety, health, environment /defining mineral resource reporting**

**Session Chair: C. Musingwini**

16:15–14:40 **The 4th wave: culture based behavioural safety**

L. Bloch, *Lance Bloch & Associates*

16:40–17:05 **Underground environmental challenges in deep platinum mining**

M. Karsten\* and L. Mackay†, *\*BBE Consulting and †Implata Platinum Ltd*

17:30–19:00 **Networking Cocktail Function**

### Session 3B—Smelting

**Session Chair: R.T. Jones**

10:50–11:15 **Sponsor Presentation: RHI AG**

11:15–11:40 **Challenges and solutions in PGM furnace operation: high matte temperature and copper cooler corrosion**

A. Shaw\*, L.P.vS. De Villiers†, R. Hundermark†, J. Ndlovu†, L.R. Nelson†, B. Pieterse†, R. Sullivan\*, N. Voermann\*, C. Walker\*, F. Stober\*, and A.D. McKenzie‡, *\*Hatch, †Anglo American Platinum Limited, and ‡Mintek*

11:40–12:05 **Highly efficient electric smelters for the platinum industry—SMS solutions for energy saving**

R. Degel\*, H. Oterdoom\*, A. van Niekerk†, and K. Schmale†, *\*SMS Siemag AG, Germany and Metix, South Africa*

12:05–12:30 **Outotec smelting solutions for the PGM Industry**

L. Aspola, R. Matuszewicz, K. Haavanlammi, and S. Hughes, *Outotec*

### Session 4B—Smelting

**Session Chair: L. Nelson**

12:30–12:55 **Innovative magnesia-chrome fused grain material for non-ferrous metals refractory applications**

D. Gregurek\*, T. Prietl†, S.B. Breyner\*, A. Ressler\*, and N.-M. Berghofer†, *\*RHI AG, TC Leoben, and †RHI AG, Austria*

12:55–13:20 **Interaction of graphite with synthetic matte**

B.M. Thethwayo and A.M. Garbers-Craig, *University of Pretoria*

13:20–13:45 **Electrode models for Søderberg electrodes**

B. Larsen, *Elkem Carbon AS, Norway*

13:45–14:25 **Lunch**

### Session 5B—Mineral Processing

**Session Chair: A. Calver**

14:25–14:35 **Sponsor Presentation: Atlas Copco**

14:35–15:00 **A practical approach to plant scale flotation optimization**

A. Harris, L. Venkatesan, and M. Greyling, *Anglo American Platinum Limited*

15:00–15:25 **The minerals plant of the future—Leveraging automation and using intelligent collaborative environment**

D.G. Almond, K. Becerra, and D. Campaign, *FLSmidth Inc.*

15:25–15:50 **Potential changes in the physical beneficiation processes that can improve the recovery or costs for the Platinum Group Metals**

J. Engelbrecht, *Multotec*

15:50–16:15 **Mid afternoon refreshments**

### Session 6B—Mineral Processing

**Session Chair: N. Barkhuizen**

16:15–16:40 **Fully autogenous grinding at Unki Mine**

**Concentrator—A case of successful value engineering**  
T. Nyakudarika\*, S. Makumbet†, and C. Rule†, *\*DRA Mineral Projects (Pty) Ltd and †Anglo American Platinum Limited*

16:40–17:05 **Hybrid Energy Flotation™—On the optimization of fine and coarse particle kinetics in a single row**

D. Govender, D. Lelinski, and F. Traczyk, *FLSmidth Salt Lake City Inc*

## 19 September 2012—Wednesday

07:00–08:00 Registration & early morning refreshments

08:00–08:10 Welcome: Conference Chair

### Session 7

Session Chair: G.L. Smith

08:10–08:40 Keynote Address:

M. Rossouw, *Xstrata Alloys, Chair–Energy Intensive Users Group of South Africa*

08:40–09:10 Keynote Address:

S. Phiri, *Royal Bafokeng*

### Session 8—Political & Economic

Session Chair: G.L. Smith

09:10–09:35 Navigating above the ground risk in the platinum sector

A. Lane, *Monitor Group*

09:35–10:00 The mystery of the missing millions

T.C. Huber, T.S. Hattingh, and J.L. Porter, *University of the Witwatersrand*

10:00–10:30 Mid Morning Refreshments

### Session 9A—Mining

Session Chair: K. Lomberg

10:30–10:40 Sponsor Presentation: Anglo American Platinum

10:40–11:05 A perspective on underground support technologies in Southern African platinum mines to reduce safety risks and enhance productivity

P.H. Ferreira, *Minova RSA*

11:05–11:30 Towards an improved pillar design methodology at Bathopele Mine

Y. Rajpal, *Anglo American Platinum Limited*

11:30–11:55 Applications and benefits of 3D laser scanning for the mining industry

J.W. van der Merwe and D.C. Andersen, *Anglo American Platinum Limited*

### Session 10A—Mining

Session Chair: R.G.B. Pickering

11:55–12:20 Systems engineering new platinum frontiers

M.C. Holton and J.L. Porter, *Centre for Mechanised Mining Systems (CMMS), University of the Witwatersrand*

12:20–12:45 Fuel cell technology in underground mining

A.R. Miller\*, G. van den Berg†, D.L. Barnes\*, R.I. Eisele\*, D.M. Tanner\*, J.M. Vallely\*, and D.A. Lassiter\*, \**Vehicle Projects Inc.* and †*Anglo American Platinum Limited*

12:45–13:10 Mine design, scheduling, and modifying factors methodology applied to big blocks compared with individual panels

D. Hanekom, *Anglo American Platinum Limited*

13:10–13:20 Sponsor presentation: Murray & Roberts Cementation, A. Widlake

13:20–14:00 Lunch

### Session 11A—Mineral Resource Management

Session Chair: C. Musingwini

14:00–14:10 Sponsor Presentation: Minova RSA

14:10–14:35 The Basic Resource Equations (BRE)—a new approach to the definition and reconciliation of mineral resources and reserves at Anglo American Platinum Ltd

D.H. Diering, D.C. Andersen, G. Langwieder, and G.L. Smith, *Anglo American Platinum Limited*

14:35–15:00 Evaluation of net smelter returns in the South African PGE industry by application of base metal concentrate commercial treatment terms

D.A. Cowen, V. Agnello, and P.J. Petit, *Snowden Mining Industry Consultants*

15:00–15:25 How an object-orientated modelling approach for a mine option study can increase the quality of decision: A case study

W. Gabryk, G.R. Lane, M. Terblanche, and G. Krafft, *Cyest Corporation*

15:25–16:00 Mid afternoon refreshments

### Session 12A—Mineral Resource Management

Session Chair: M. Mthenjane

16:00–16:25 Case study on quantitative risk modelling to get a realistic risk adjusted project valuation

G.R. Lane, M. Terblanche, G. Meyer, and N. Sasto, *Cyest Corporation*

16:25–16:50 Framework to simplify the management of throughput and constraints

A. Cambitsis, *Cyest Corporation*

16:50–17:15 The oxidized ores of the main sulfide zone, Great Dyke, Zimbabwe: Turning resources into minable reserves—mineralogy is the key

T. Oberthür\*, F. Melcher\*, P. Buchholz\*, and M. Locmelis†, \**Federal Institute for Geosciences and Natural Resources (BGR)*, and †*The University of Western Australia, Crawley, Australia*

### Session 9B—Refining

Session Chair: J.G. Taylor

10:30–10:40 Sponsor Presentation: Metix Pty Ltd

10:40–11:05 Metal accounting in the platinum industry: How effective is it?

P.G. Gaylard, N.G. Randolph, and C.M.G. Wortley, *University of Cape Town*

11:05–11:30 Recycling of platinum group metals from automotive catalysts by an acidic leaching process

R. Rumpold and J. Antrekowitsch, *University of Leoben, Austria*

11:30–11:55 Platinum<sup>IV</sup> and rhodium<sup>III</sup> chemistry viewed through new eyes: What new secrets can <sup>195</sup>Pt and <sup>103</sup>Rh NMR spectroscopy reveal about speciation in as relevant to refining solutions?

K.R. Koch, *Stellenbosch University*

### Session 10B—Refining

Session Chair: L. Zindi

11:55–12:20 The recovery of platinum, palladium, and gold from a cyanide heap solution, with use of ion exchange resins

E. Schoeman\*, S.M. Bradshaw\*, G. Akdogan\*, and J.J. Eksteen†, \**University of Stellenbosch*, and †*Curtin University, Australia*

12:20–12:45 The adsorption and elution of platinum group metals (Pt, Pd, and Au) from cyanide leach solutions using activated carbon

C.A. Snyders\*, C.N. Mpinga\*, S.M. Bradshaw\*, G. Akdogan\*, and J.J. Eksteen†, \**Stellenbosch University*, and †*Curtin University, Australia*

12:45–12:55 Sponsor presentation: Outotec

13:20–14:00 Lunch

### Session 11B—Mineral Processing

Session Chair: Ms K. Reddy

14:00–14:10 Sponsor Presentation

14:10–14:35 Tailings disposal: an approach to optimize water and energy efficiency

P.L. Moolman\* and A. Vietti†, \**DRA Mineral Projects* and †*Paterson & Cooke Consulting Scientists*

14:35–15:00 Technology selection of stirred mills for energy efficiency in primary and regrinding applications for the platinum industry

C. Ntsele\* and J. Allen†, \**Metso Minerals South Africa (Pty) Ltd*, and †*Metso Minerals Industries, USA*

15:00–15:25 **Pre-concentration of UG2 platinum ore: Economic benefits to mine, plant, and smelter**  
F. Smit\*, V. Coetzee\*, M. Seymour†, and S. Notnagel‡, \*DRA Mineral Projects (DRAMP) and †DRA Mining (DRAM)

15:25–16:00 **Mid afternoon refreshments**

### Session 12B – Mineral Processing

Session Chair: N. Barkhuizen

16:00–16:25 **Case studies of simultaneous mining and mineral processing optimisation applied to platinum and nickel operations**

S. Burks, *Whittle Consulting (Africa) (Pty) Ltd*

16:25–16:50 **Developing platinum concentrator phased development schedule by utilising a dynamic stockpile model**

J. Labuschagne, *TWP Consulting*

16:50–17:15 **Using SmartTag™ to track ore in process integration and optimization projects: Some case studies in a variety of applications**

E. Isokangas\*, B. Sönmez†, M. Wortley‡, and W. Valery‡, *Metso Process Technology & Innovation - \*Finland, †Turkey and ‡Australia*

20:00–22:00 **BBQ at the Valley of the Waves**

## 20 September 2012 – Thursday

07:00–08:00 **Registration & early morning refreshments**

08:00–08:10 **Welcome: Conference Chair**

### Session 13

Session Chair: R.T. Jones

08:10–08:40 **Keynote Address:**

M. Solomon

08:40–09:10 **Keynote Address:**

D. Msiza, *Department of Mineral Resources*

### Session 14 – Applications

Session Chair: R.T. Jones

09:10–09:35 **The South African catalytic converter industry**

K. Dewar, *Catalytic Converter Interest Group*

09:35–10:00 **Update on the development of Platinum-based alloys for potential high temperature applications**

L.A. Cornish\*†‡, M.B. Shongwe\*†, B. Odera\*†‡, J.K. Odusote\*§, M.J. Witcomb\*†, L.H. Chown\*†‡, G.O. Rading\*†, and M.J. Papo\*° *\*DST/NRF Centre of Excellence in Strong Materials, hosted by the University of the Witwatersrand, †School of Chemical and Metallurgical Engineering, University of the Witwatersrand, ‡African Materials Science and Engineering Network (AMSEN): A Carnegie-IAS Network, §School of Physics, University of Witwatersrand, #University of Ilorin, Nigeria, \*University of Nairobi, Kenya, and °Mintek*

10:00–10:40 **Mid Morning Refreshments**

### Session 15A – Human Challenges

Session Chair: J. Mothomogolo

10:40–11:05 **Filling the global industry skills gap**

S. Forrest, *SFA (Oxford) Ltd*

11:05–11:30 **Sandvik apprentice programme: we make it possible**

S. Marx, *Sandvik*

11:30–11:55 **A perspective on the supply and utilisation of mining graduates in the South African context**

C. Musingwini, J.A. Cruise, and H.R. Phillips, *University of the Witwatersrand*

12:00–12:40 **Lunch**

### Session 16A – Projects

Session Chair: M. Mthenjane

12:40–13:05 **Development of innovative funding mechanisms for mining start-ups**

J. Mothomogolo, *Wesizwe Platinum Ltd*

13:05–13:30 **Safer shaft sinking by design**

A. Widlake, *Murray & Roberts Cementation*

13:30–13:55 **Wesizwe Platinum from an 'explorer to a mine developer'**

J.M. Mothomogolo, *Wesizwe Platinum Ltd*

13:55–14:20 **Mid afternoon refreshments**

### Session 15B – Mineral Processing

Session Chair: R.G.B. Pickering

10:40–11:05 **A protocol for conducting and analysing plant trials: Testing of high chrome grinding media for improved metallurgy**

C.J. Greet, *Magotteaux, Australia*

11:05–11:30 **The impact of entrained air and enhanced flow measurements for mass flow calculations and balancing at platinum concentrators**

C. O'Keefe\*, J. Felix†, and P. Thwaites‡, \*CIDRA Minerals Processing, †Felix Project Management, and ‡Xstrata Process Support

11:30–11:55 **Process and asset monitoring at a PGM concentrator for UG2 concentrate**

P. French, J. Rademan, and J. Wiese, *Lonmin*

12:00–12:40 **Lunch**

### Session 16B – Underground Rock Drilling Technology

Session Chair: K. Lomberg

12:40–13:05 **The use of high-pressure, water-hydraulic (hydropower) technology in South African, narrow-reef hard-rock mines**

P.D. Fraser, *Hydro Power Equipment (Pty) Ltd*

13:05–13:30 **What is the best energy delivery system for hand-held stope drilling and associated equipment in narrow-reef hard rock mines?**

P.J. Petit\* and P.D. Fraser†, \*Snowden Mining Industry Consultants and †Hydro Power Equipment (Pty) Ltd

13:30–13:55

13:55–14:20 **Mid afternoon refreshments**

### Session 17 – SFA Oxford Session

Session Chair: S. Forrest

14:20–14:40 **High level market forces at play: supply squeeze versus technology offset**

B. Clarke, *SFA*

14:40–15:00 **Zimbabwe: Filling the bread basket with PGMs**

S. Trickey, *SFA*

15:00–15:20 **Recycling surge: green shoots for end-users**

R. Grimble, *SFA*

15:20–15:40 **Swinging the technology pendulum: has the PGM clock stopped?**

J. Watts, *SFA*

### Session 18 – Closing Panel Discussion

Session Chair: S. Forrest

15:40–16:30 **Discussion Session**

16:30–16:40 **Conference Closure**

R.T. Jones