

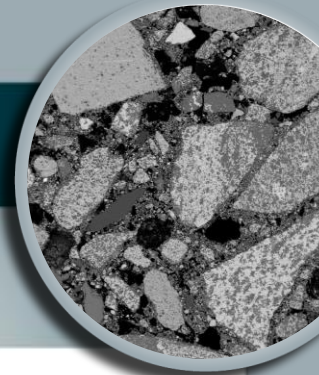


## TECH FOCUS 1

### Characterisation of coal fines using automated SEM techniques

Coal processing by dense media separation is best suited to coarse particulate material (>1 mm), whereas cleaning efficiency is poor for ultrafine coal (<1 mm), which is usually discarded. Ultrafine coal discards are of low grade, and contain deleterious pyrite, which can generate acid mine drainage. Through the identification and quantification of contaminants and their modes of occurrence, automated scanning electron microscopy (SEM) offers insights for reprocessing to clean the coal as well as mitigate environmental effects.

[Read more here.](#)



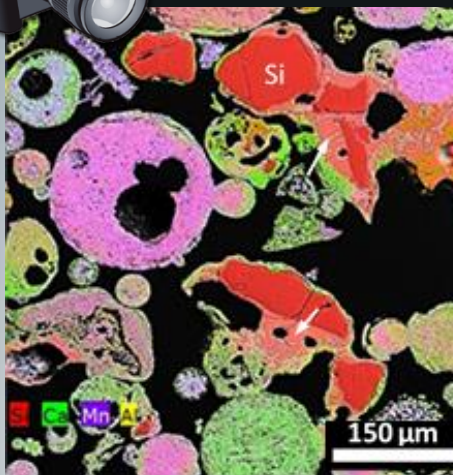
## TECH FOCUS 2

### Characterisation of solar treated manganese ore fines

Given the energy constraints for smelting in the manganese industry in South Africa, alternative sources of energy have been considered for efficient processing. Concentrated solar power (CSP) has been applied for the pre-heating, reduction and sintering as a green alternative to conventional coal-based electrical heating. Mineralogical assessment using X-ray diffraction and scanning electron microscopy helped in the proof of concept for the application of CSP for sintering of manganese ore fines.

[Read more here.](#)

## MINTEREST



False-colour element map of a sintered dust sample (87% -212 µm), fired at 1000°C. Liquid state sintering is defined by slag phases (arrowed) between solid particles of silica (Si). SEM studies help to model sintering mechanisms so that blockages may be prevented in furnace off-gas ducts during Mn smelting.

## ROCK



### Mintek representatives on NSTF



Marian Manuel, from Mineralogy, and Dr Marian Lydall, from the Research, Development and Innovation Services Unit, were selected to represent Mintek on the National Science and Technology Forum (NSTF). The NSTF is a broadly representative umbrella stakeholder body for 122 organisations, with interest in science, engineering, technology (SET) and innovation. The team will offer the NSTF insights regarding developments in mineral and metallurgical technologies in South Africa. More information on the NSTF is available at <http://www.nstf.org.za/about/>.



## MINERALOGY IN THE FIELD

### DIAMOND VERIFICATION

15-16 June 2021,  
KwaHlathi, KwaZulu-Natal



Susan Brill and Dr Kirsten Youlton joined a delegation at the KwaHlathi village, near Ladysmith on 15 June 2021. Following the rush for purported diamonds in the area, they conducted visual examinations and hand-held XRF measurements to confirm that the crystals dug up were not diamonds but quartz.

[Read more here.](#)

### MMMA VIRTUAL MEETING

14 May 2021

Dr Desh Chetty presented a talk on developments in 2D and 3D imaging for mineralogical characterization at the recent Mine and Metallurgical Managers Association meeting.

### MANDELA MINING PRECINCT VIRTUAL SYMPOSIUM

21-22 June 2021

Dr Kirsten Youlton spoke about 3D tomography as part of the Precinct's Youth Day initiative under the theme "Beneficiating 3 years of research, development and innovation"

### IMPALA PLANT VISIT

9 June 2021,  
Rustenburg



Candice Carelse and members of the Minerals Processing Discipline visited Impala's UG2 plant. The team was taken from the metallurgy laboratory to the run-of-mine offloading site, followed by processing units including crushing, screening and milling.

## the Nugget Effect

• Publication woes: Too many authors to cite? No problem et al.

## MINERALOGY FACILITIES & CONTACT DETAILS

Sample preparation | X-ray diffraction | Scanning electron microscopy | Electron probe microanalysis | Optical microscopy | Sampling  
Automated mineralogy facility – QEMSCAN, MLA | Laser ablation ICP-MS | Fourier transform infra-red spectroscopy  
Micro-XRF imaging | GIS facility | X-ray computed tomography

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