

TECH FOCUS 1

Flotation of liberated PGM species from Platreef ore under reduced reagent conditions

The modes of occurrence of platinum group minerals (PGM) in various ores are important considerations for their flotation. Whereas much insight into recovery and upgrading of PGM can be gained by such information as liberation and grain size distribution, these are almost always reported for the PGM as a whole. Recent studies in the Division set about assessing the impact of different PGM species on their relative floatability, using Platreef ore, which contains a wide variety of PGM. To effect a more competitive flotation environment, a reduced reagent regime was implemented.

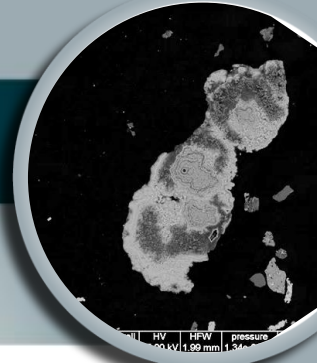
[Read more here.](#)

TECH FOCUS 2

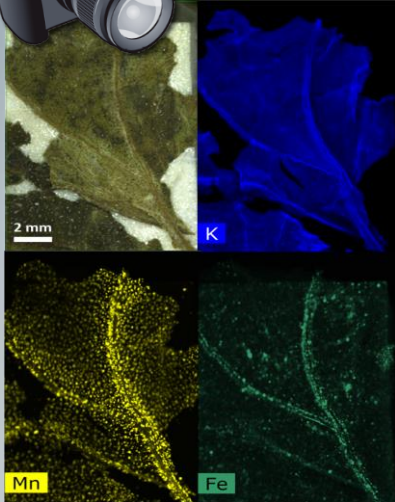
Importance of mineralogy and modelling in Ni laterite processing

Ni laterites account for 70% of the world's reserves, compared with Ni sulfide ores. Laterites are considerably more complex in their mineralogical and physical make-up, prompting more complex flowsheets for Ni extraction. Mineralogical characterization is vital to understand the department of Ni in various minerals, as well as their modes of occurrence in order to develop appropriate flowsheets. The use of mineralogical information in modelling and simulation, however, would add value for the efficient and optimal extraction of value from these ores.

[Read more here.](#)



MINTEREST



Photograph (top left) and selected micro-XRF elemental maps (K, Mn and Fe) of a piece of dried leaf from the sunflower plant (*helianthus annus*). Sunflowers are being trialed for phytoextraction to remove toxic metals from gold tailings dumps in the Witwatersrand Basin, as part of Marian Manuel's PhD research. Micro-XRF imaging of leaves and roots after growth in pristine vs. contaminated substrates will help monitor toxic metal uptake efficiency.

ROCK



Parisa Doubra joins Mineralogy



We welcome Dr Parisa Doubra, who recently joined the Division as a senior scientist. Parisa is a chemical engineer with extensive experience in process modelling for various commodities in both commercial and research capacities. She joins Mineralogy from the Hydrometallurgy Division, where she performed simulations for water recovery, rock breakage and gold recovery, amongst others. She will be building the Division's capabilities in modelling and simulation, incorporating mineralogy.



SAIMM PGM conference 2-4 November 2022

Refilwe Moeletsi presented some of her PhD research outcomes at the SAIMM conference on Platinum, held at Sun City in December. Her paper covered the different rock types that host PGM mineralization, and possibilities for PGM extraction from each. Refilwe was joined by other Mintek team members, who also presented papers at the conference.

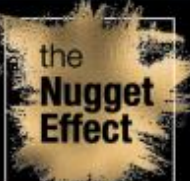


LETHABO POWER STATION VISIT 23 February 2023

Dr Derek Rose and Cebisa Dubase recently participated in a MINSAs organized visit to the Lethabo power station. Approximately 50 000 tons of coal are burnt here per day, with 20 000 tons of ash being produced (both fly ash and bottom ash) daily. The high ash content (particularly in the clay) of the burnt coal is of interest as most of the REE-bearing minerals are known to be primarily associated with clays, which are then concentrated further in the fly ash. Cebisa seeks to characterize various fly ashes in terms of their critical metal potential; the MINSAs visit was thus very insightful.

PGM CONCENTRATOR VISITS 8-9 February 2023

Dr Derek Rose, Dr Leo Vonopartis, Dr Kirsten Youlton and Veruska Govender recently conducted visits to two PGM plant concentrators in the eastern limb of the Bushveld Complex to discuss ongoing projects with them. The visits were fruitful, and further mineralogical input is envisaged to help resolve plant issues.



Philosophy is the science that considers truth – Aristotle

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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