

TECH FOCUS 1

Coarse particle characterisation for gravity separation of Fe ore

Depletion of high grade iron ores in South Africa demands beneficiation of lower grade ores to meet grade specification. Gravity separation is conducted on both coarse (+6 mm) and fine (-6 mm) ore particles. Quantitative mineralogical characterisation guides such processes, however, characterisation of the coarser fractions is often difficult to achieve by automated SEM methods. Micro-XRF is therefore being pursued for this purpose, in an effort to understand, and ultimately predict, particle distribution amongst different density classes as a function of texture.

[Read more here.](#)



TECH FOCUS 2

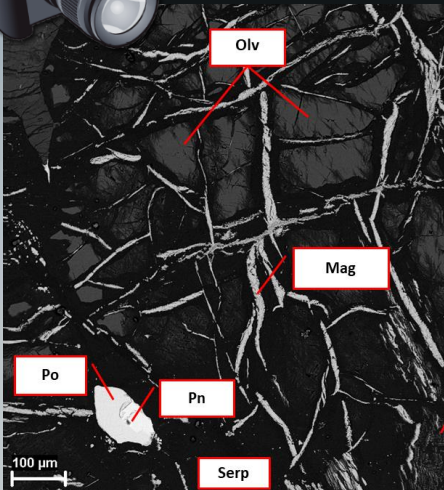
Waste characterisation from spent lead battery processing

The recycling of spent lead-acid batteries involves neutralisation to produce gypsum, and smelting that produces slag of variable composition. Owing to their hazardous nature, such wastes require special disposal arrangements, and are usually disposed of in landfills, which represent the final and least desirable means of sustainable waste management. A proposed study will characterise the phase compositions in these waste products, assess toxic metal leachability, and the potential for adsorption by clays to mitigate their release into the environment.

[Read more here.](#)



MINTEREST



BSE image of feldspathic harzburgite from the Platreef, showing magnetite (Mag) and serpentine (Serp) formed as a result of olivine (Olv) alteration. Serpentine is known to host Ni, and its presence should be noted as a possible contributor to poor Ni recovery in sulfide flotation. Base metal sulfides in this sample include pentlandite (Pn) and pyrrhotite (Po).

ROCK



Desh Chetty elected to IMA council; Derek Rose joins Mineralogy



The Division's Head of Mineral Science, Dr Desh Chetty, was recently elected to the council of the International Mineralogical Association (<http://mineralogy-ima.org>). The IMA comprises 37 national societies and various commissions addressing different topics in mineralogy. The Division also welcomes Dr Derek Rose as Head of Process Mineralogy. Derek will oversee process optimisation projects, whereas Desh will handle process development projects.

MINERALOGY IN THE FIELD

VISIT TO BATTERY RECYCLING PLANT 23 June 2022

Jonathan Desebrook and Dr Desh Chetty visited a battery recycling plant in Gauteng to sample lead-bearing slag and sludge. These will form part of Jonathan's intended MSc study on the use of natural clays to adsorb heavy metals from such wastes to reduce toxic metal pollution of the environment. See Tech Focus article above.

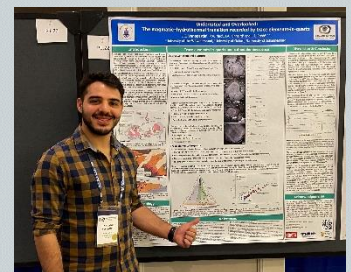


MMME'22 CONFERENCE 31 July-2 August 2022

Mapadi Olifant attended the virtual portion of the MMME'22 conference, held in Prague, where she presented part of her MSc research on the characterisation of coarse Fe ore particles. The aim is to describe and ultimately predict the distribution of different textural types of Fe ore amongst density classes in dense media separation. The micro-XRF technique is being used in conjunction with automated scanning electron microscopy, to quantitatively define textural types in two Fe ore samples from South Africa. See Tech Focus article above.

SEG conference August 2022

Dr Leonidas Vonopartis presented some of his PhD research at the 2022 SEG conference on "Minerals for our future", in Denver, Colorado. His presentation demonstrated the applicability of quartz compositions to vector hydrothermal mineralisation for mineral exploration.



All of science is nothing more than the refinement of everyday thinking – Albert Einstein

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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