

TECH FOCUS 1

Mineralogy of tap-hole clays

Tap-hole clays are little-studied, but very important components in furnace design. Tap-hole clays are used to plug the tap-hole of a furnace in-between the tapping of matte and slag. The clay is injected into the tap-hole using a clay gun and must expand and harden upon exposure to heat from the furnace in order to create an impermeable seal. The porosity of the clay and size of the mineral grains affect the permeability and ability to drill the clay respectively.

[Read more here.](#)

TECH FOCUS 2

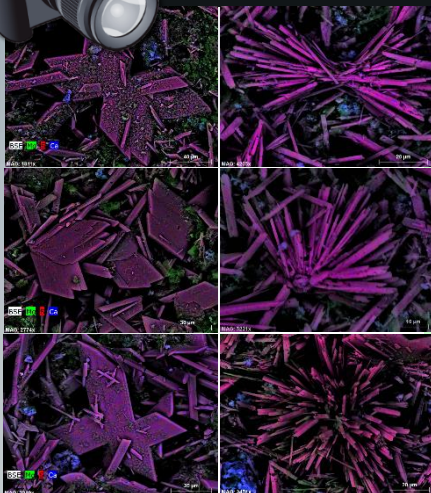
Mineralogical characterisation of niobium- and tantalum-bearing ores

With the drive towards high-technology components, demand for niobium and tantalum has increased. Tantalite and columbite (coltan), the chief sources of these critical elements, occur as accessory minerals in rare metal granites and pegmatites. Lithium, tin and tungsten may be associated with coltan resources. A mineralogical understanding of the mode of occurrence of these minerals is important for their processing and recovery.

[Read more here.](#)



MINTEREST



Gypsum morphology is important for its successful physical separation from precipitated reagents for their recovery and re-use. SEM element maps show gypsum (pink) amongst lime (blue) and Mg hydroxide (green). The platy gypsum (left images), sometimes formed as butterfly twins, is favoured over the rosette-like aggregates (right images) of lenticular gypsum for effective separation and recycling of Mg hydroxide.

ROCK



Mineralogy Team Perseveres



The Mineralogy team has been weathering the Covid-19 storm since early 2020, implementing rotational work schedules and overcoming infection scares, amongst other challenges, to ensure that we continue serving our clients and collaborators as best as possible. Our stakeholders are thanked for their ongoing support.



IMGRAD CONFERENCE

4 August 2021

The 4th South African Biennial Conference on Imaging with Radiation (IMGRAD) was hosted online by NECSA on 4 and 5 August. The conference attracted students and experts in tomography in the country, highlighting capabilities of the different facilities, as well as research projects making use of tomography. Dr Desh Chetty presented a talk on the UNISA-Mintek X-ray tomography facility, describing the instrumentation and some of the research in process mineralogy done to date.

TAILINGS DUMP VISIT

August 2021



Marian Manuel visited a derelict and ownerless gold tailings dump near Snake Park (also known as the Tudor Shaft), deemed to be toxic. She will conduct further research to determine the extent of toxicity, explore technologies to extract toxic metals, and ultimately rehabilitate the site.

ISA webinar

16 September 2021

As part of its marine scientific research information series for Africa, the International Seabed Authority (ISA) held a webinar on Deep-sea Mineral Resources and Technologies, on 16 September. Dr Desh Chetty gave an invited talk on Africa's contribution to global mineral supply. Specifically, Mintek's testwork capabilities for beneficiation potential of deep sea polymetallic nodule deposits was showcased. The aim was to create awareness for more meaningful African participation in deep sea ore research. Further information may be found at: <https://www.isa.org/jm/>



The man who moves a mountain begins by carrying away small stones – Confucius

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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