

THE PERFECT GRAIN

newsletter

your guide to HV pulsed power processing

Issue 2; May 2010

BREAKING NEWS:

THERMO 2010 in Glasgow, 16th-20th of August 2010.

selFrag sponsors and will attend the annual meeting in August.

Liberation of morphological intact fine sized sanidine

In a test for Oxford University selFrag successfully liberated the fine fraction of morphological intact sanidine from volcanic rock, without breakage of large sanidine. The fine fraction will reflect the exact timing of the volcanic eruption by Ar/Ar dating.

Diamond exploration

In cooperation with the Finish Survey (GTK) selFrag developed a new approach for diamond exploration. It is based on processing several tonnes of diamondiferous rock to liberate and recover all included diamonds. The simultaneous evaluation of micro- and macro-diamonds provides significantly better statistics and improves the evaluation of deposits at low costs in reasonable time.

Want more information? Contact us at info@selfrag.com

Unlock the Value – selFrag for Diamond Processing

The value of gem minerals is directly linked to their size. selFrag has demonstrated the morphological intact recovery of accessories like zircon. selFrag can also do this for diamonds!

selFrag & diamond

- Efficient size reduction of feedstock.
- No change in diamond size or appearance.
- Fragmentation energy transferred only to gangue.

Client Benefit:

- Process that liberate morphological intact diamond.
- Significantly improves diamond concentrate quality.

More information? Contact us: info@selfrag.com

Diamonds are a girl's best friend – but of course only if a considerable size. Conventional technologies for extracting diamonds from host rocks involves significant risk of breakage. So why play lottery, when selFrag is able to liberate them along the grain boundaries? To demonstrate this, selFrag performed a series of tests to evaluate diamond behaviour during the fragmentation of gangue, and to document any changes in diamond appearance. As diamonds are rare in their source rocks selFrag used a diamond doped sample for the tests. The sample reflects a typically composition of in diamond mining

produced DMS concentrate. The concentrate is flooded with oxide and sulphide minerals. 8 different samples were doped with up to 5 carats of different sized diamonds (1.5 to 4mm). In all tests the gangue was reduced to a P80 of 0.8 mm. All included diamonds were recovered complete and showed no changes in size or appearance.

This is an impressive demonstration of selFrag's ability to focus fragmentation energy into the gangue while liberating gem minerals safely.

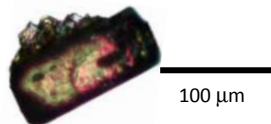
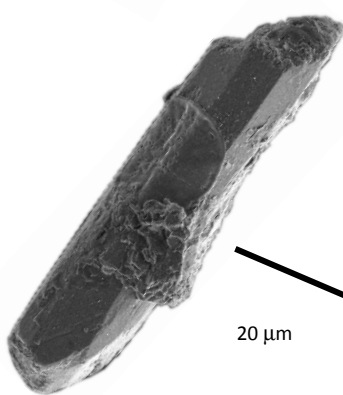
selFrag provides a powerful new tool in diamond exploration and production.

Liberation of zircon with xenotime overgrowth

In collaboration with Trinity College Dublin (Ireland) selFrag successfully demonstrates the liberation of zircon with intact xenotime overgrowth from sandstones.

Xenotime is an accessory in different rocks. The mineral incorporate U & Th and is used for dating. In detrital rocks xenotime may form epitaxially overgrowth on zircon during diagenesis. This association dates events soon after the deposition of the original sediment. Conventional preparation limits this application as crushing damages the fragile overgrowths. Currently the preferred approach is to cut xenotime overgrowths directly out of thin sections.

This is time-consuming, expensive and wasteful. In contrast, the selFrag process preserves xenotime overgrowths on zircon grains intact. The recovered large xenotime overgrowths on zircons are in pristine euhedral shapes. selFrag is a cheap, clean and fast method for the liberation of xenotime overgrowths for geochronological studies, and is a convenient method to process samples in the search for the largest datable xenotime overgrowths.



More information? Do not hesitate to contact us at info@selfrag.com

conventional

- No recovery of xenotime overgrowth on zircon by conventional sample preparation.
- Time-consuming and expensive extraction by cutting out overgrowth from thin section.
- Significant losses

selFrag samples

- Preservation of xenotime overgrowth on liberated zircon.
- Clean and fast method.
- Sufficient sample amount for reliable scientific interpretation.

Liberation of gemstone from host rock

The value of gemstones such as rubies and emerald depends on purity, composition and size. The critical task of liberating large gemstones is often performed manually as no comminution technology exists to do the job. Read how selFrag has demonstrated excellent liberation and provides a technical solution for gemstone processing.



Facts to gemstone processing:

RUBIES

- Liberation at coarsest size with efficient removal of attached host rock.
- Significant rejection of gangue in first step of process.
- Suitable throughput for operation

EMERALD

- Best achievable liberation of weakened crystals
- Efficient removal of coating.
- Reduction of losses to tailing.
- Technical solution at needed throughputs.



Gemstone mining are typically small scale operations. The lack of suitable comminution technology results in many operations using labour intense approaches such as hammers and chisels. As a result, many quality gemstones are lost to accidental breakage, ineffective liberation and subsequent loss into the tailing stream, and theft. The selective liberation technology of selFrag offers a unique solution to these challenges, as demonstrated in tests with ruby and emerald.

Rubies:

selFrag investigated liberation of gem rubies from a amphibolite host. The rubies occur as 10-20 mm large agglomerates strongly intergrown by host rock. In a first stage treatment the selFrag process liberated the agglomerates and rejected about 50 % of host rock below 1mm. The resultant coarse pre-concentrate was subsequently exposed to a second treatment. This removed remaining host rock and yielded pure individual rubies of up to 4 mm size with no losses of gem material. Using the selFrag Explorer continuous-feed system throughput for the application ranged



between 100-200 kg/h.

Emerald:

selFrag performed in depth testing to the liberation of emerald from pegmatite. The sample was characterized by a mix of 20-30 mm pure columnar crystals plus agglomerates of individual crystals intergrown with the pegmatite host. Additionally, optical inspection of the sample revealed numerous micro-cracks caused by geological deformation that weaken the gem material. In order to avoid further weakening and breakage of the target emerald the energy input was minimized during processing. selFrag successfully liberated the different components completely and gem crystals of up to 20-30 mm length with brilliant preserved surfaces were recovered. 40% of the gangue was rejected at -2 mm and no valuable mineral was left encapsulated within the host rock. Even coated crystals were recovered clean. selFrag delivers a technical solution to this application at needed throughputs.

COMING UP NEXT

The liberation of valuable and/or fragile minerals

• Zircon - What is your process?

Together with GEUS selFrag compared the liberation of zircon of several different standard lab preparations. Have a look at the astonishing data.

• Micro vessel

A useful accessory for valuable small sample. Some application examples.

• Melt inclusions in olivine!

selFrag tests for JAMSTEC show incredible improvement.

selFrag inside

selFrag staff – who's next. Read more about our valuable staff.

Can you Frag?

Our surprise - look forward to exiting new results.



Emerald sample

selFrag inside



selFrag AG sells, delivers, installs and services HV pulsed power plants worldwide. Who are the people behind this?

Ruben Segovia –Business Development

Ruben joined selFrag in 2008 as business developer for the mining industry. He is a mechanical engineer with an MSc in automatic systems and in technology management. He has 12 years experience in research and development of solutions for the mining industry. As manager and founder of the Technological Innovation Division at HighService Ltd. he developed different lines of products and expert services for mining. Specifically the line of product "Robotic Solutions", originated the spin-off MIRS SA, where the partners and shareholder are Nippon Mining & Metals Co., Ltd. and CODELCO Chile. He is responsible for development of new applications of selFrag systems in material processing. Want to talk to him? Do so at r.segovia@selfrag.com

CAN YOU FRAG?

Curious about CAN YOU FRAG? Send us suggestions of material to info@selfrag.com - we will inform about the results in the newsletter.

Here an example for spark plugs...



We would say:

YES WE CAN!

selFrag provides an easy way to recycle the spark plugs

Impressum & contact:

© selFrag AG
CH-3210 Kerzers
Switzerland
info@selfrag.com
www.selfrag.com

Direct contact:
Dr. Alexander Weh
PhD Geology
Sales & Marketing
a.weh@selfrag.com

The specialist in HV pulsed power

