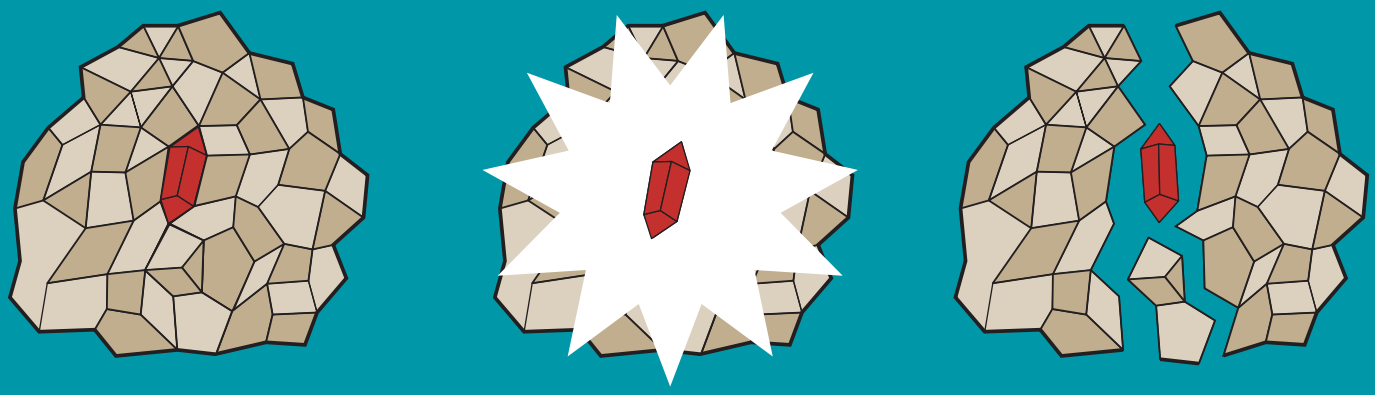
selFrag

Worldwide launching of selFrag Lab



The first commercial high voltage pulsed power laboratory equipment for selective fragmentation

selFrag Lab now makes selective fragmentation by means of the elctrodynamic high voltage (HV) pulsed power process commercially available. Under a worldwide license from the Research Center of Karlsruhe in Germany, selFrag AG (Div. of Ammann-Group) has developed and commercialized the technology. Controlled variable HV-discharges of very short duration are applied to solids under water. Very fine plasma channels and the resulting shock waves propagating through the solids cause the material to disaggregate along grain boundaries, inclusions or inhomogeneities. The highly selective fragmentation process of selFrag Lab liberates morphologically intact minerals while minimizing the production of undesired fines. selFrag Lab is a user friendly and compact piece of equipment designed for use in a wide range of laboratory environments, in the mining and oil & gas industries, as well as in geologic surveys or other research institutes. Here selFrag Lab offers new possibilities in the exploration of natural resources, in paleontology and planetology, in material analysis, or process development.

1) Selective fragmentation of ultra fine grained marble with selFrag Lab.
Completely liberated polygonal calcite grain and muscovite flakes (attracted by electrostatic forces)

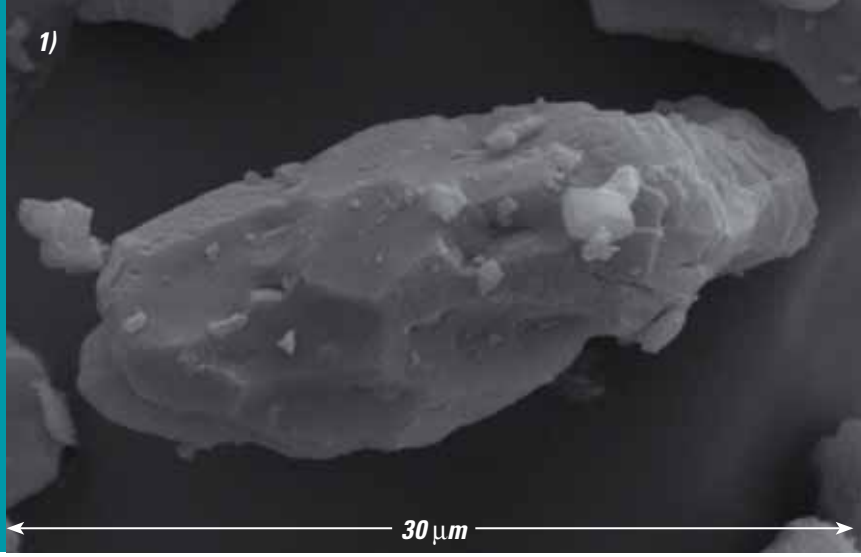
2) 3) 4) Liberation of accessory minerals from a medium grained granite by selective fragmentation with selFrag Lab.
2) Idiomorphic zircon completely liberated
3) Idiomorphic magnetite completely liberated
4) Idiomorphic apatite completely liberated

5) 6) Bottle glass fragmentation - Comparison of selFrag Lab vs. jaw crusher.
5) selFrag Lab: Cube shaped glass fragments
6) Jaw crusher: Chip shaped elongated glass flakes

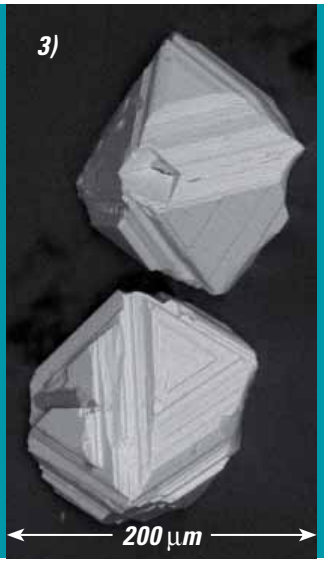
7) 8) Selective fragmentation of radiolarian chert.
Complete liberation of unbroken microfossiles by selFrag Lab without further treatment

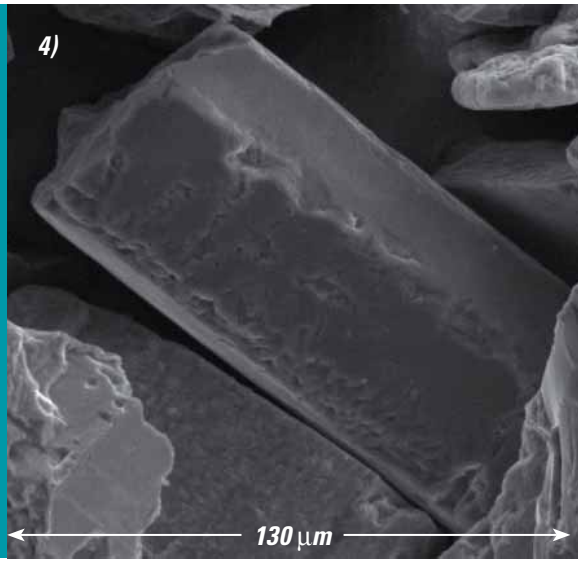
1) Sample processing and pictures by M. Herwegh Institute of Geology, University Bern

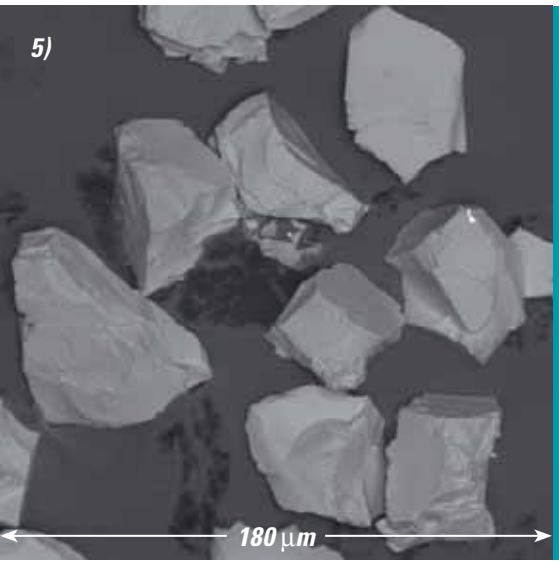
2) to 8) Sample processing and pictures by E. Gnos MHN Geneva

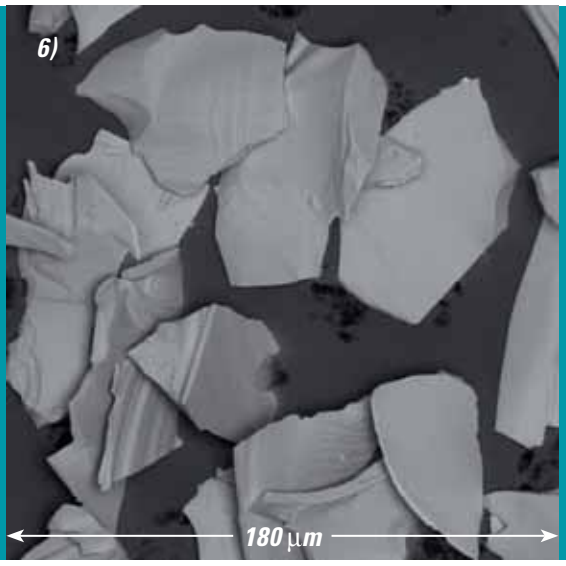

1)
30 µm


2)
170 µm


3)
200 µm


4)
130 µm


5)
180 µm


6)
180 µm


7)
34.3 µm
MUSEUM D'HISTOIRE NATURELLE GENEVE


8)
34.3 µm
MUSEUM D'HISTOIRE NATURELLE GENEVE

Joint study with the Geological Survey of Finland for the selective fragmentation of diamondiferous kimberlites

selFrag AG and Geological Survey of Finland (GTK) conducted a joint study on two diamondiferous kimberlite samples as a part of their co-operation to develop new applications for the selFrag technology for the purposes of mineral research and exploration. The objective was to study the liberation of heavy minerals by selective fragmentation with the laboratory fragmentor selFrag Lab and to evaluate the applicability of the selFrag technology in diamond exploration. The heavy mineral suite consisted of kimberlitic indicator minerals used in diamond exploration and prospectivity evaluation. The kimberlites chosen are group I kimberlites containing typically pyrope garnet, chrome diopside, Mg-ilmenite and minor chrome spinel. One of the samples was a recently sampled relatively fresh kimberlite, whilst the other represents a relatively weathered kimberlite, that deposited as glacial detritus during the latest Quaternary glaciation.

1) 2) Unweathered kimberlite rock

1) Completely liberated heavy minerals, 2-4 mm. Note kelyphitic rim around garnets and leucoxene cover on ilmenite.
2) Completely liberated heavy minerals, 1-2 mm, ilmenite, garnet and cpx nearly in equal proportions.

3) 4) Weathered cobbles of kimberlite

3) Completely liberated heavy minerals, 2-4 mm, weathering surfaces and grain morphology intact.
4) Completely liberated heavy minerals, 1-2 mm, oxidized and weathered surfaces distinctly preserved.

Observations:

Indicator minerals up to 8 mm in diameter were completely liberated.
Selective fragmentation recovered the mineral grains as they are in the rock.
Kelyphitic and leucoxene rims typically covering the garnet and ilmenite grains respectively were well preserved.
The selFrag technology was able to liberate the indicator minerals from the weathered sample completely along the original grain boundaries.
Some xenoliths of up to 8 mm in size were also recovered.

Conclusions:

Selective fragmentation is well suited for diamond exploration and offers a very efficient, flexible and fast method for releasing the important heavy minerals intact as they are in the rock.

Applying selective fragmentation also in bulk sample diamond testing has the potential of greatly improving current processing methods.

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More detailed information is available at www.selfrag.com.

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