

# LIBERATION OF ZIRCONS USING SELFRAG LAB

**SEFRAG Lab – the first commercial High Voltage (HV) pulsed power laboratory equipment for selective fragmentation. Very short pulsed HV-discharges applied to solids under water cause the material to dis-aggregate 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.**

## EXTRACTING ZIRCONS FROM DIFFERENT LITHOLOGIES BY SELFRAG LAB. ADVANTAGES FOR DATING.

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### Purpose of study :

Zircon is an important mineral for dating in geoscience. It is used for different geochronological methods like U-Pb, (U-Th)/He and fission track. For these methods it is important to liberate morphologically intact zircons without inclusions in an adequate quantity. Conventional sample preparation often produces zircons of low quality at a rather low yield. In contrast the highly selective fragmentation process of SELFRAG Lab produces good quality zircons at relatively high yields. This is especially crucial for rocks, which include small amounts of zircons. To demonstrate the high performance of SELFRAG Lab regarding quality and yield of liberated zircons, different igneous, volcanic and metamorphic rocks were processed.

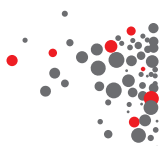
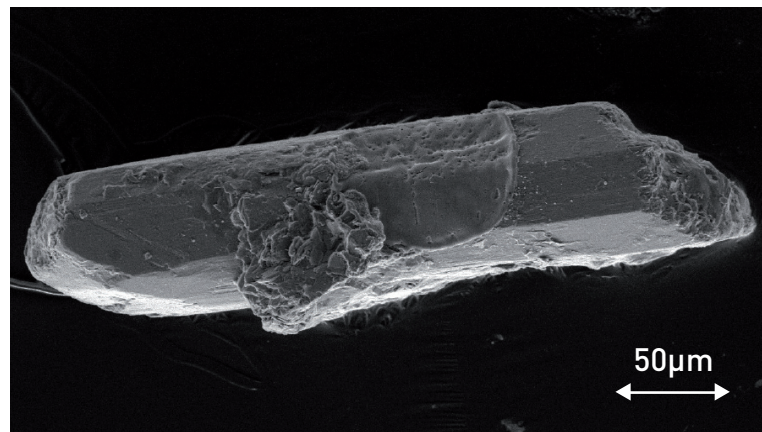
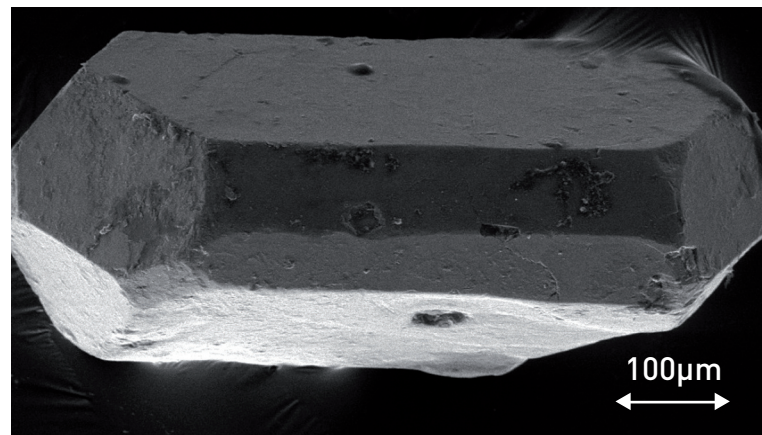
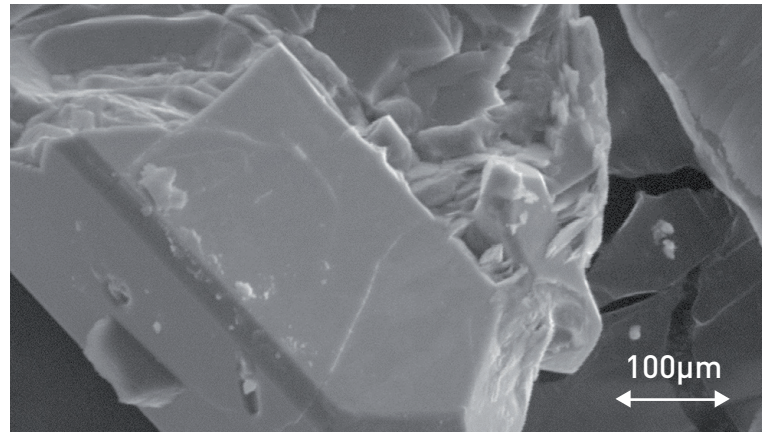
### Rock features :

For this study different hard rocks were used. They originated from an area of the Ifrea-Zone near Biella in NW Italy. The samples ranged from acid to basic igneous rocks like granite, monzonite, syenite, tonalite and basic plutonite.

Also included were samples of basic volcanic rocks and metamorphic rocks, mainly gneisses. Judging from thin section analysis igneous and metamorphic rocks contained sufficient amount of zircon, whereas in volcanic rocks no zircons could be found.

### Results/Findings :

This study confirmed that due to the predominant fracturing along grain boundaries SELFRAG Lab liberates morphologically intact zircons with clean surfaces and delivers a high yield of zircons from the different host rocks. The heavy mineral concentrate of the plutonic and metamorphic rock samples fragmented with SELFRAG Lab contained a remarkably large amount of completely liberated idiomorphic zircons. One kilogram of these rocks was sufficient to liberate enough zircons for dating. Even from the volcanic rocks with their relatively low concentration of zircons enough well preserved zircons could be liberated by SELFRAG Lab.



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