

EFFECT OF PLASMA CHANNEL

SELFRAG 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 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.

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**Melting Phenomena induced by SELFRAG Lab
A short study**

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Issue / Purpose of Study :

SELFRAG Lab uses short pulsed high voltage discharges to disaggregate solids. For less than one micro second a plasma channel of one to two microns is induced, resulting in local temperature rises of up to 10'000 °C. What effect does this have on processed samples? This study was conducted to examine the type and frequency of melting phenomena in different solids.

Material / Method :

Glass and quartz were processed with the SELFRAG Lab. SEM investigations were conducted to identify and quantify possible melting phenomena in the grain size fraction 125-250µm.

Results / Findings :

In glass \leftarrow 1 % of observed particles showed melting phenomena. In quartz only 2 grains out of several thousand were observed with melting phenomena.

Conclusion :

The impact of short-termed high temperature pulses on liberated grains of the investigated materials is negligible. Affected particles are rare and can be detected for removal.

