

News



NEWS

01/03/2006

Detailed chemical profile across the new Be-treated (beryllium) blue sapphires

A faceted approximately 1 carat sized Be-treated blue sapphire (acquired 2 weeks ago from the market, sold as Be-treated) was cut in half. The half-cut sapphire provided the possibility of measuring the penetration of the Beryllium into the sapphires body (length 5mm and with 3mm). Two profiles were measured across the sample perpendicular to each other, along the length and the width of the sapphire. The samples were measured with LA-ICP-MS at the [ETH Zurich](#) by Prof. D. Günther.

Results: The Beryllium diffused through the entire sapphire body with 14.5ppm maximum at the rim. Towards the core the values are decreasing to about 4ppm. The same sample was measured with LIBS in the GRS laboratory and the count rate of the LIBS machine was calibrated against the values obtained by the LA-ICP-MS. The values of 4ppm were also detected with our LIBS machine. Numerous other samples with an approx. 3 times higher maximum of Beryllium (as determined by LIBS count rates) were detected as reported earlier (approx. 50ppm sapphire surface analyses).

One sample with a blue rim was detected confined to high Be-concentrations. About this sample we will report separately in our next news.

Chemical analysis of core and rim of a Beryllium-treated blue sapphire (in ppm-weight)

	Li	Be	B	Mg	Al	Si	Ti	V	Cr	Fe
Rim	<0.533	14.5	<2.18	71.7	526600	451	75.3	6.82	63.4	2480
Core	<0.616	4.51	<2.97	85.4	526600	305	91.4	5.59	72.6	2510

Article URL: <https://www.gemresearch.ch/news/2006/03/01/detailed-chemical-profile-across-the-new-be-treated-beryllium-blue-sapphires>

© 2023, GRS GemResearch Swisslab AG

