Universität Basel

Publication

A New Method for Detecting Be Diffusion-Treated Sapphires: Laser-Induced Breakdown Spectroscopy (LIBS)

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4606439
Author(s) Michael S. Krzemnicki, Michael S.; Hänni, Henry A.; Walters, Roy A.
Author(s) at UniBasel Krzemnicki, Michael ;
Year 2004
Title A New Method for Detecting Be Diffusion-Treated Sapphires: Laser-Induced Breakdown Spectroscopy (LIBS)
Journal Gems & Gemology
Volume 40
Number 4
Pages / **Article-Number** 314-322
This article describes the first application of laser-induced breakdown spectroscopy (LIBS) to gemology. So far, the detection of Be-diffused sapphire and ruby has been based on LA-ICPMS or SIMS, neither of which is readily available to most laboratories. In this study, we use LIBS to detect beryllium in corundum at very low concentrations (down to 2 ppm). This technique is a reliable tool for identifying Be diffusion–treated sapphires, and is affordable for most commercial gemological laboratories. As with other laser-based techniques, LIBS may cause slight damage to a gemstone, but this can be minimized by choosing appropriate instrument parameters.
Publisher Gemological Institute of America
URL https://doi.org/10.5741%2Fgems.40.4.314
edoc-URL https://edoc.unibas.ch/79322/
Full Text on edoc No;
Digital Object Identifier DOI 10.5741/gems.40.4.314
ISI-Number WOS:000226373700007
Document type (ISI) Article