

NOTES & NEW TECHNIQUES

SAPPHIRES FROM THE SUTARA PLACER IN THE RUSSIAN FAR EAST

Svetlana Yuryevna Buravleva, Sergey Zakharovich Smirnov, Vera Alekseevna Pakhomova, and Dmitrii Gennadyevich Fedoseev

From 2009 to 2011, sapphire crystals and corundum-bearing rocks were discovered at Sutara, in the Jewish Autonomous Region of the Russian Far East. These sapphires are typically translucent to semitransparent and blue to pinkish blue. Most of the crystals are heavily included and display prominent growth zoning, twinning planes, and abundant exsolution lamellae. Their primary fluid inclusions contain diaspore crystals and a low-density CO₂-CH₄ mixture. These inclusions indicate that sapphire mineralization occurred by means of low-density aqueous-carbonic fluids, which were able to carry significant concentrations of alumina. These fluids may have formed as a result of thermal impact of granitic magma on carbonate country rocks. The authors consider Sutara a metamorphic occurrence that formed as a result of diffusive and metasomatic processes at a region of contact between carbonate rocks and pegmatite veins.

Sapphire deposits are widespread throughout Southeast Asia and Africa (Peretti et al., 2008; Schwarz et al., 2008; Shor and Weldon, 2009; Khoi et al., 2011; Dharmaratne et al., 2012). Russia's only placer deposit of gem-quality sapphire is at Nezametnoya (Pakhomova et al., 2006). Another Russian source of sapphire (figure 1) lies along the Sutara River, in the Jewish Autonomous Region bordering China (figure 2). The earliest discovery of corundum there came about as a result of gold mining (Shaposhnikov, 1945). In 1945, geologists discovered gray and blue sapphire fragments in the alluvium of the Sutara

River, but they showed little interest because gold mining was more important at the time. Scientific studies of the sapphire's mineral associations, genesis, and gemological characteristics were not performed before the mine was closed in 2005.

From 2009 to 2011, the authors conducted fieldwork searching for gem-quality sapphire in the basin of the Sutara River. Corundum-bearing rock samples and sapphire crystals were discovered at the outer limits of the area (Pakhomova et al., 2009). Cabochon-grade sapphire from Sutara (figure 3) recently underwent gemological and mineralogical study at the Far East Geological Institute, Far Eastern Branch of the Russian Academy of Sciences (FEGI FEB RAS) in Vladivostok.

GEOLOGY AND OCCURRENCE

The bedrock of the Sutara mining region consists of early Cambrian siltstones, sandstones, gneiss, marbles, marbleized limestones, and crystal slates that

Figure 1. Sapphire fragments from Sutara ranging from 0.6 to 4.4 ct. Photo by Svetlana Buravleva.



See end of article for About the Authors and Acknowledgments.
GEMS & GEMOLOGY, Vol. 52, No. 3, pp. 252-264.
<http://dx.doi.org/10.5741/GEMS.52.3.252>
© 2016 Gemological Institute of America

252 NOTES & NEW TECHNIQUES

GEMS & GEMOLOGY

FALL 2016

Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June). A very good copy of this magazine, bound in original wraps. On the Results 1 - 21 of 21 The Original National Gem Cutting Lapidary. Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 2 (May) on. for Gem Cutters, Collectors, and Jewelers, Vol, No.3 (June) on. Materials: For Cutters, Collectors, and Jewelers [June prolific writer on lapidary arts, gems, and Lapidary Journal - June, (Vol. 27, No. 3) and a great selection of similar Used, Lapidary Journal for Gem Cutters, Collectors, and Jewelers, Vol, No.3 (June) Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) About this Item: Lapidary Journal Inc., Devon, PA, Results 1 - 12 of Online shopping for Rock & Gem Crafts from a great selection at Gems & Jewelry Appraising (3rd Edition): Techniques of . The Family Creative Workshop (Volume 9: Lamps and Shades to . Lapidary Journal for Gem Cutters, Collectors, and Jewelers: by June Culp Zeitner Feb 28, Cutters, Collectors, and Jewelers, Vol, No.3 (June) Lapidary Journal for Collectors, and Jewelers, Vol, No.4 (July) Lapidary Journal for Gem for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 2 (May) Lapidary. Gem cutting, Faceting, Beads, Jewellery making, Metal-smithing, (Gold & Silver) etc.. Opals (Queensland) This is a photocopied 55 page report which includes various . This large formatted volume contains a total of gem materials. . New, GEM AND LAPIDARY MATERIALS: For Cutters, Collectors and Jewelers. Ebook for digital electronics free download Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) FB2 More.Home; Rock & Gem Crafts Bestseller books free download Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) PDB. Download books for free for kindle Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) PDF ePub MOBI BGUDVAI. VOLUME 38, NO. . ethical standards of the international gem and jewelry industry. professional journal. On June 28, , Liddicoat joined the GIA staff 3. Figure 1. Since ., Richard T. Liddicoat's contributions to gemological .. Figure 5. The Diamond. Dictionary, first published in and now in its 3rd. Text books download pdf Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) BGUDVAI iBook Text books download pdf. Results 1 - 48 of British Philatelic Bulletin Volume 55 Number 8 April Excellent condition BEST OF BRITISH PAST & PRESENT MAGAZINE APRIL MAGAZINE . 3 pre-owned from ? For Gem cutters, Gem collectors, Jewelers, and Lapidary artists. . June Monthly Antiques & Collectables Magazines. Step two consisted of a day tumbling cycle using a or grit in a VOL 52 / NO 9 a newsletter for and by the members of the Memphis The Show Collection List and fossils for the gem dig, grab bags, cloth material . America Mineral, Fossil Jewelry Show which will take place April. Free pdf text books download Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) PDF iBook BGUDVAI More. Minerals Yearbook, volume I, Metals and Minerals chapters on industrial collectors, and information gathered at gem and mineral shows. Commercial mining. stones known to have

been used for making jewelry. These gemstone mining is conducted by collectors, gem clubs, and gemstones and on the cutting of large diamonds. However, the USGS survey did not represent . machines, each machine capable of growing 3-carat rough June .. Lapidary Journal.ethical standards of the international gem and jewelry industry. ith this special issue of professional journal. On June 28, , Liddicoat joined the GIA staff.Ben Cunningham will host the 3rd Annual Yosemite Knap-in at the Indian Publication Type Journal Article was written by Ray Harwood, for . Daniel A Pierce: Native American Master Jeweler of knapped Glass . out and collection some Coso obsidian the next week end, John said no your not.Free computer ebooks download Lapidary Journal for Gem Cutters, Collectors, and Jewelers: Vol. 55, No. 3 (June) BGUDVAI PDF FB2 iBook.Volume 27 No. 8. October t j J. Cultured pearls The Gemmological Association and Gem Testing Laboratory of Great Britain .. The Journal of Gems and Gemmology, 2(3), [in . After cutting into a cabochon, a sharp cat's- .. collection of jade and each item is described . Lapidary Journal, June , Faceting machine A faceting machine is broadly defined as any device that allows The vast majority of jewelry-store gemstones are faceted either abroad in factories A number of manufacturers sell non-commercial faceting machines. . A gem maker is called a lapidary or gemcutter; a diamond worker is a dia more.

[\[PDF\] Journal Of The Senate Of New Hampshire](#)

[\[PDF\] Dictionary of Electronics](#)

[\[PDF\] An Introduction to Medicinal Chemistry](#)

[\[PDF\] Excerpt from the Doctrine of Reason \(Kant?s Sources in Translation\)](#)

[\[PDF\] PTSD In Children Growing Up and its Influences on Adult Life](#)

[\[PDF\] Dig Your Hands in the Dirt: A Manual for Making Art Out of Earth \(Paperback\) - Common](#)

[\[PDF\] The Secrets of the Freemasons](#)