

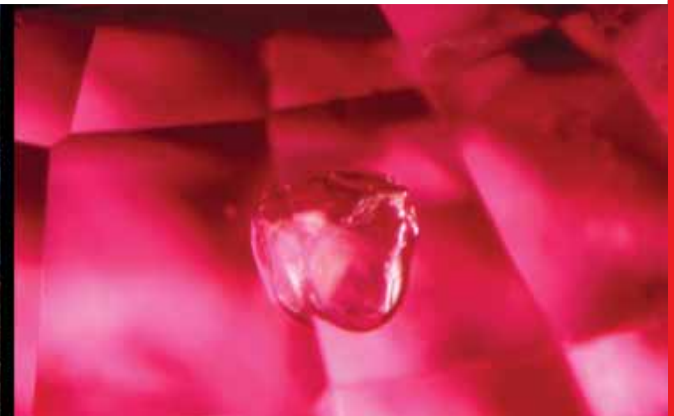
EXTRA
VCD Inside

Contributions to Gemology

No.2 August 2003



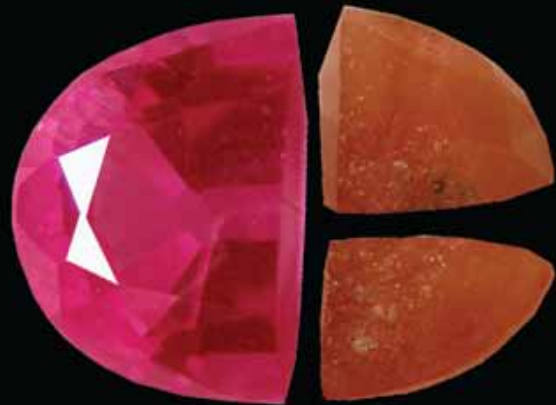
Report on a Ruby and Spinel Mine
in Namya (Northern Burma)



Identification of Spinel
and Ruby from Namya



Rare Gemstone: Painite



Beryllium Treatment (Part B)

GRS

**GEMRESEARCH
SWISSLAB**

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Abstract

The "Second Issue of Contributions to
Gemology" focuses on the latest news from the
world of gemological discoveries.

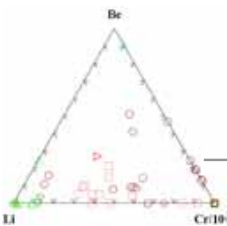

New mines producing "pigeon's blood" rubies
and vibrant colored spinels have been found in a
remote part of Northern Burma (Myanmar) called
"Namyá". An intriguing GRS expedition to Namyá
in 2001 is documented in a photo album and
VCD movie report.

Gemological research and identification of the
new rubies and spinels from Namyá include the
use of latest technology for chemical analyses
(LA-ICP-MS).

Two more of the world's rarest collector
gemstones - "Painite" - have been found which
resulted in scientific research cooperation.

Part B of the contribution to the understanding of
a new treatment for corundum is the research on
Beryllium-treated pink sapphires and rubies.

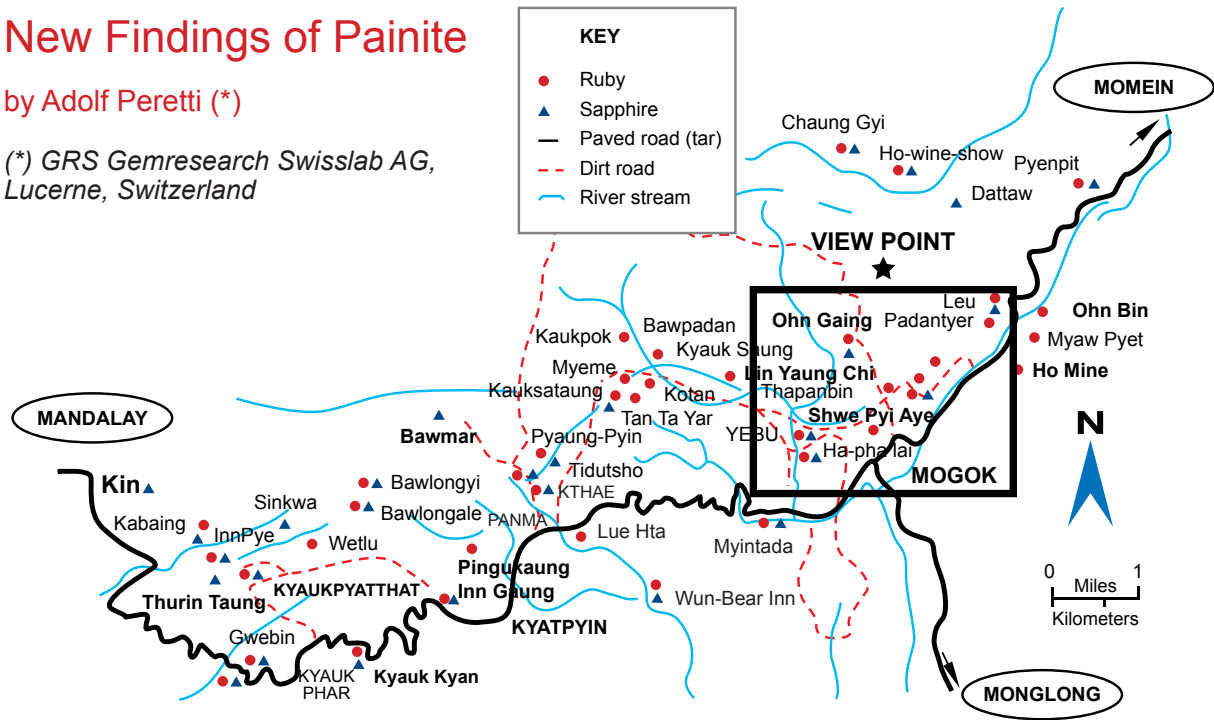
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New Findings of Painite

by Adolf Peretti (*)

(*) GRS Gemresearch Swisslab AG, Lucerne, Switzerland



Painite was first mentioned by Claringbull-Gordon et al. (1957) after being found in the Mogok Stone Tract and named after Arthur Charles Davy Pain - a well known mineralogist and gemologist of the Mogok area. Painite is so rare that worldwide available specimens are individually numbered. To the best knowledge of the author, crystals No.1 and No.2 are currently deposited in the collection of the Natural History Museum London (a small sample slice from No. 1 is at Caltec University), Crystal, No.3 is in the

Fig. D1 Map of the Mogok and the Ohn-Gaing/ Sagaing mining area (outlined in the Map). Ruby and sapphire mines are indicated. The picture shows the mining area North of Mogok (Myanmar) as seen from the view point (Ohn-Gaing in the foreground and Mogok in the background). Picture taken by the author during the study of the Ohn-Gaing mine and the study of Painite No.6a in Mogok in the year 2002

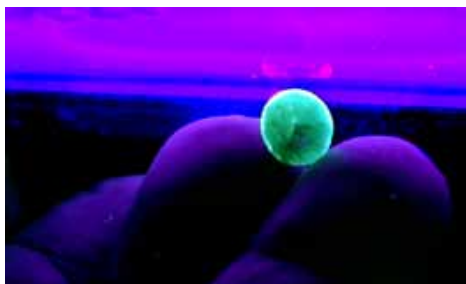


Fig.D2 UV short wave fluorescence of Painite No. 5

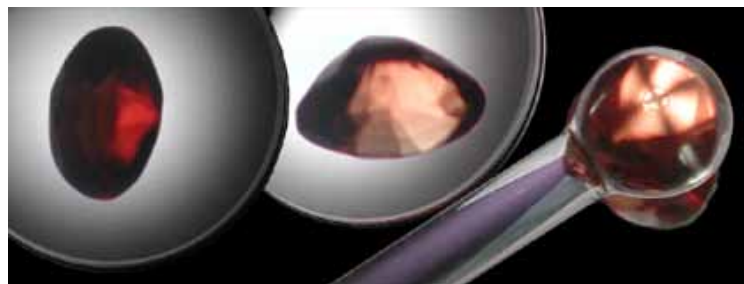


Fig.D3 Painite is dichroic and uniaxial as can be seen using a polariscope (parallel and crossed polarizers) and a projection sphere.

Gemological Institute of America collection, while Crystal No. 4 is now in two pieces - both privately owned. Two more samples have recently been discovered by A. Peretti: A 2.54 ct faceted Painite, which was identified through testing in Bangkok (Thailand) and labeled as Painite No.5, Painite No. 6a, a large rough fragment of 54 cts (dimensions: 18.7x14.3x10.8 mm) - indirectly discovered from the miner's production, not directly from the mining spot - during an expedition in May 2002 to Mogok close to the private, government licensed Ohn-Gaing mine, Sagaing, Mogok district, Myanmar (Fig.D5). A small fragment (0.15 ct) of this rough Painite was obtained from 6a, and labeled Painite No. 6b. (Fig.D6), whereas the mother piece remained with its finder in Mogok. A research project on Painite No. 5 and 6b revealed that the crystal structure of Painite as presented by Moore and Araki (1976) needed to be revised. For details on the gemological and special testing see Armbruster et al. (2003).

Gemmological data

Optical character: Uniaxial, negative, $e=1.789$ and $o=1.815$, Pleochroism: very strong brownish-red to orange-yellow, Density: 4.00 ± 0.01

A scientific study on Painite 5 and 6b will be published elsewhere and is submitted to:

Armbruster, Th. (1), Dobelin, N. (1), Peretti A. (2), Günther D. (3), Reusser E. (4) and Grobety, B (5) (2003):

The crystal structure of Painite $CaZrB[Al_9O_{18}]$, revisited, American Mineralogist, submitted.

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Further references:

Caringbull G.F., Hey M.H., Payne C.J. (1957): Painite, a new mineral from Mogok, Burma. Mineralogical Magazine 31, 420-5.

Harlow, G.E. (2000) The Mogok Stone Tract, Myanmar: Minerals with complex parageneses. In: Proceedings of the 4th conference

Painite No. 5

Fig.D4 A faceted Painite of 2.54 ct which was identified in 2001 during testing in Bangkok (labeled as Painite No.5). Painite No.5 was used for detailed chemical analyses (see Armbruster et al., submitted) GRS collection.



Painite No. 6a



Fig.D5 Picture of the 54 ct Painite (labeled Painite No.6a) photographed with crystallographic faces present and in a direction where ruby overgrowth has been found. Studied in Mogok. This piece remains in the country of origin.

Painite No.6b

Fig.D6 Picture of the Painite No. 6b (Painite "No. 6b"). A 0.15 ct reference sample from Painite No. 6b was used for detailed chemical and structural analyses which guided to a revision of the crystal structure of Painite (Armbruster et.al (2003), submitted). GRS collection.



on "Minerals and Museums", Melbourne, Australia, 75. Iyer, L.A.N. (1953).The geology and gemstones of the Mogok Stone Tract, Burma. Memoirs of the Geological Survey of India, 82, pp. 100. Moore, P.B. and Araki, T. (1976) Painite, $CaZrB[Al_9O_{18}]$: Its crystal structure and relation to jeremejevite, $B_5[1_3Al_6(OH)_3O_{15}]$, and fluoborite, $B_3[Mg_9(F,OH)_9O_9]$. American Mineralogist, 61, 88-94. Shigley, J. E., Kampf, A. R., and Rossman, G. R. (1986) New data on Painite. Mineralogical Magazine, 50, 267-270. Webster, R. (1994) Gems, their sources, descriptions and identification, p.1027, Butterworths. Sevenoaks, UK.