LETTER

Discreditation of paraspurrite

JOEL D. GRICE,1,* PAUL M. ADAMS,2 AND RALPH ROWE1

1Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, Ontario K2P 1E4, Canada
2126 South Helberta Avenue no. 2, Redondo Beach, California 90277-3448, U.S.A.

ABSTRACT

Paraspurrite is discredited as a mineral species. No type material was available necessitating collecting new material from the original locality. A crystallographic study shows paraspurrite to be polysynthetically twinned spurrite, twin law by reflection on {001}. The spurrite cell calculated from XRPD unit-cell refinement is \( a = 10.478(3), b = 6.700(2), c = 14.127(3) \text{Å}, \beta = 101.02(2)^\circ, V = 972.8(3) \text{Å}^3 \). The cell refined on two “twinned” crystals yielded: \( a = 10.494(1), b = 6.7116(6), c = 28.216(3) \text{Å}, \alpha = 90.059(6), \beta = 100.132(5), \gamma = 90.023(6)^\circ. \) This monoclinic primitive cell transforms to monoclinic \( B \) (Fig. 2): \( a = 10.494, b = 6.7116, c = 55.56 \text{Å}, \alpha = 90, \beta = 90.6, \gamma = 90^\circ, \) which corresponds to a sub-cell described as “paraspurrite” by Colville and Colville (1977); space group \( P2_1/a \) with cell parameters: \( a = 10.473, b = 6.706, c = 27.78 \text{Å}, \alpha = 90, \beta = 90.58, \gamma = 90^\circ. \) The discreditation has been approved by the IMA Commission on New Minerals, Nomenclature and Classification.

Keywords: Paraspurrite, discreditation, twin, crystallography

INTRODUCTION

Paraspurrite, from Inyo County, California, was first described as a new mineral by Colville and Colville (1977). It was determined to be a polymorph of spurrite “having a doubled unit cell in the \( c^* \) direction.” “Precession photographs provided crystal geometry, systematic extinctions, and preliminary cell parameters. Accurate cell parameters were calculated using a least-squares analysis of 15 reflections measured with an automated four-circle single-crystal diffractometer.” There was no mention of using this crystal to collect an intensity data set to solve the crystal structure. A “proposed” crystal structure was given and briefly discussed.

Here, paraspurrite is shown to be twinned spurrite. As there is no type specimen, voucher specimens used in the discreditation will be stored at the Canadian Museum of Nature (Ottawa), Smithsonian Institution (Washington, D.C.), and the Los Angeles County Natural History Museum. The discreditation was unanimously approved by the IMA Commission on New Minerals, Nomenclature and Classification.

TYPE MATERIAL

The new mineral proposal of paraspurrite was presented to the IMA CNMNC in 1977 (number 77-16). This proposal stated the “Type material will be deposited at the U.S. National Museum, Washington, D.C., U.S.A.” This was never done. Type material was also sought at the Los Angeles County Natural History Museum and the California State University, where the original research was conducted; only to discover no type material exists. In the Smithsonian collection, there are two “paraspurrite” samples from “California” (NMNH 157372 and NMNH 153997). Both samples were donated by David Wilson. Chips from these samples were generously provided by the Smithsonian Institution and both were identified as spurrite by X-ray single-crystal and X-ray powder-diffraction methods. As it was impossible to verify the structure of “paraspurrite,” it was omitted in the study of crystal structure relationships in silicate-carbonate minerals (Grice 2005). This was duly noted by Editor Bob Martin and this study brings resolution to this problem. Discreditation of a mineral species that has no type material is problematic (Dunn 1990) and requires extra care to make sure a valid species is not inadvertently discarded.

Both authors, Alan Colville and Patricia Colville, were contacted and neither had any material left from their research. P.M.A. located the “type” locality, which was confirmed by Alan Colville. The locality, which consists of three spurrite bodies in a small roof pendant, was mapped and systematically sampled.

OCCURRENCE

Colville and Colville (1977) describe “paraspurrite” occurring with gehlenite, vesuvianite, and apatite with sparse larnite in a small roof pendant with an outer zone of massive gроссular. The locality, as described in this paper, is “Inyo County, California, north of the small mining town of Darwin.” Our detailed mapping and sampling showed that the spurrite occurs in three small close, but separate, skarn bodies in a roof pendant. X-ray powder diffraction (XRPD) showed that in many areas melilitite is the predominant second phase, however, tilleyite is also relatively common. In even more localized areas, spurrite + melilitite ± tilleyite can be found with merwinitie, rankinite, kilchoanite, monticellite, and an \((\text{SiO}_2)\cdot(\text{SO}_4)\) apatite mineral, in various combinations. Larnite was not identified in our study.