

SHORT COMMUNICATIONS

MINERALOGICAL MAGAZINE, DECEMBER 1983, VOL. 47, P. 567

Space group of a low tridymite, Tardree Mountain, Northern Ireland

A. VON LASAULX (1879) discovered and described tridymite from the Tardree Mountain where it occurred as thin hexagonal plates in the cavities of the rhyolite locally known as the Tardree or Sandy Brae rhyolite. Recently Dr Macpherson of the Royal Scottish Museum sought confirmation of Lasaulx's find (Macpherson, 1983) and Mr Rowan of Lisburn, Co. Antrim, collected some of the tridymite-bearing rhyolite from the above locality at the author's request.

An X-ray investigation of this material has been undertaken, in which a thin hexagonal plate, 0.5 mm across, was mounted on the Weissenberg goniometer with one of the extinction directions parallel to the rotation axis of the latter. The repeat distance along the rotation axis was measured from an oscillation photograph as 17.19 Å; since this is the *b* axis of the low tridymite it follows from the description of Lasaulx that the optic plane must be parallel to (100) and the morphology must comprise a basal pinacoid, a brachypinacoid and a prism. The lengths of *a* and *c* axes were measured from the zero-level Weissenberg as 9.92 and 40.91 Å respectively, therefore the prism must be (110). From the zero and first-level photographs it is obvious that the space group must be *Cmmm*, *Cmm2*, or *C222*. Sato's (1964) space group for a similar tridymite, *C222*₁, can not be justified for the Tardree tridymite because the 900 reflection is definitely present.

Fron del (1962) lists four polytypes of low tridymite with *c* dimensions of 8.18, 16.3, 40.78, and 81.57 Å, corresponding respectively to 2-layer, 4-layer, 10-layer, and 20-layer polytypes; thus the Tardree tridymite corresponds with the third polytype. For the 20-layer polytype Lukesh and Buerger (1942) found the space group to be *Fmmm*, *Fmm2*, or *F222* but for the other two polytypes the space group is either not known or is uncertain. The space group of the middle tridymite is not known but that of the high tridymite is *C6/mmc* (Fron del, 1962).

Acknowledgements. Many thanks are due to Mr Edward Rowan for collecting the material and to Dr J. Preston for making the laboratory facilities available at the Queen's University of Belfast.

REFERENCES

- Fron del, C. (1962) *Dana's system of Mineralogy*, 7th edn. 3, Wiley, New York.
Lasaulx, A. von (1879) *J. R. Geol. Soc. Ireland*, **15**, 30–8.
Lukesh, J., and Buerger, M. J. (1942) *Am. Mineral.* **27**, 143–4.
Macpherson, H. G. (1983) *Mineral. Mag.* **47**, 243–57.
Sato, M. (1964) *Mineral. J. (Tokyo)*, **4**, 131.

[Manuscript received 14 February 1983;
revised 28 March 1983]

© Copyright the Mineralogical Society

Department of Geology, Ulster Museum, Belfast, N.Ireland

RAB NAWAZ

MINERALOGICAL MAGAZINE, DECEMBER 1983, VOL. 47, PP. 567–8

New data on gobbinsite and garronite

GOBBINSITE was recently described as tetragonal (Nawaz and Malone, 1982). The material used showed intergrowths akin to twinning which was not visible optically and was assumed to be on

(101). This assumption was made to explain the doubling of the diffraction spots on the rotation and Weissenberg films. Recently, however, a vug with untwinned gobbinsite has been discovered. An

X-ray study of this gobbinsite shows that the mineral is orthorhombic but strongly pseudo-tetragonal, a 9.80, b 10.15, c 10.10 Å, both c and X parallel to elongation, space group $Pnmm$ (59) or $Pnm2_1$ or $Pn2_1m$ (31). It is clear that the twinning intergrowths in gobbinsite are better described as occurring on (110) in order to explain the previous single crystal photographs. An electron microprobe analysis of the untwinned gobbinsite was by mistake published (Nawaz, 1982) under the name of Giant's Causeway phillipsite (anal. 8, Table I).

The above data shed new light on the garronite problem. Garronite was previously thought to be tetragonal (Nawaz and Malone, 1982) with twinning intergrowths similar to those of gobbinsite. A fresh X-ray diffraction study of the garronite fibres reveals that the c axis and X are parallel to

elongation, an oscillation photograph gives c 9.93 Å, and zero and first-level Weissenberg photographs show spot doubling and tetragonal symmetry due to twinning intergrowths but closer examination proves a and b to be dissimilar, a 9.89 and b 10.30 Å. The single crystal data are too complicated for space group determination but the unit cell clearly is body-centred.

REFERENCES

- Nawaz, R. (1982) *Irish Naturalists J.* **20**, 480–3.
 — and Malone, J. F. (1982) *Mineral Mag.*, **46**, 365–9.

[Manuscript received 17 February 1983]

© Copyright the Mineralogical Society

Department of Geology, Ulster Museum, Belfast, N. Ireland

RAB NAWAZ

MINERALOGICAL MAGAZINE, DECEMBER 1983, VOL. 47, P. 568

An appeal for reflectance data on opaque minerals for the QDF

THE Commission on Ore Microscopy (COM) of the International Mineralogical Association (IMA) is very keen to complete the collection of modern reflectance data for opaque minerals in the IMA/COM Quantitative Data File (QDF) 2nd Edition. It is expected that the QDF will become as useful a reference for ore microscopy as is the JCPDS Powder Diffraction File for X-ray powder diffraction data.

It is important that the QDF be updated regularly, and all ore microscopists are urged to submit their reflectance data for new opaque

minerals, and new data obtained on known species or microanalysed varieties of more common species. These data may be submitted to the QDF Editor, A. J. Criddle. In this connection, A. J. Criddle has the appropriate forms required and is at your disposal for any further information or questions that may arise in order to facilitate transmittal of these data for publication in the 2nd Edition of the QDF File, with due acknowledgement of the work.

[Communication received 22 April 1983]

Secretary IMA/COM, Laboratoire de Minéralogie Cristallographie, T. 16, 4 Place Jussieu, 75230 Paris Cedex 05, France

B. CERVILLE

Department of Mineralogy, British Museum (NH), Cromwell Road, London SW7 5BD, England

A. J. CRIDDLE