SHORT COMMUNICATIONS

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Sanmartinite: new data

SANMARTINITE, ideally $ZnWO_4$, is the zinc analogue of ferberite, $FeWO_4$, and hübnerite, $MnWO_4$. It was initially described in 1948 by Angelelli and Gordon from Los Cerillos, 7 km south-west of San Martin, in the Department of San Martin, San Luis Province, Argentina, where it is associated with scheelite and quartz. This is the type and only reported locality for the species.

Two samples of sanmartinite were examined in the present study. One sample, NMNH no. 105681, is a type specimen deposited in the Smithsonian by Samuel Gordon in 1948, and designated as type in his handwriting. The second sample, ANSP no. 25575, is from the collections of the Academy of Natural Sciences of Philadelphia, and is labelled in Gordon's handwriting. The sample consists of many small pieces, and several vials of concentrate; one of which is of even mesh and probably represents a split from the material of Angelelli and Gordon. This sample has the best claim to be the holotype.

Crystals from both samples were X-rayed using powder mounts on Gandolfi 114·6 mm cameras, and Cu-K_α X-radiation. The resultant data are in fair agreement with the published data for sanmartinite (JCPDS no. 11-128). However, the patterns of both NMNH no. 105681 and the vial of probably analysed concentrate ANSP no. 25575 also have reflections attributable to scheelite impurities. Hence the original analyses were likely performed on impure material, and a re-examination of the only natural occurrence of sanmartinite was thought to be in order.

The present analyses were performed with an ARL-SEMQ electron microprobe using an operating voltage of 15 kV and a beam current of 0·15 μA. The standards used were synthetic scheelite for calcium and tungsten, synthetic zinc oxide for zinc, manganite for manganese, and hornblende for iron and magnesium. The data were corrected for background, backscatter, fluorescence, and absorption using a computer program. The resultant analyses are given in Table I.

The data indicate that the composition of the type sanmartinite is quite variable and ranges from $(Zn_{0.52}Fe_{0.46}Mn_{0.02})WO_4$ to $(Zn_{0.81}Fe_{0.18}Mn_{0.01})WO_4$. The calcium reported by Angelelli and Gordon is undoubtedly due to admixed scheelite, inasmuch as no significant calcium was found in the sanmartinite crystals. A separate analysis of the scheelite indicates it is essentially pure calcium tungstate with only traces of iron, manganese, or zinc.

TABLE I. *Microprobe analyses of sanmartinite*

	FeO	MnO	ZnO	WO_3	Total
1 ANSP 25575	11·39	0·43	14·51	73·98	100·31
2 ANSP 25575	8·65	0·31	16·08	74·41	99·45
3 ANSP 25575	6·44	0·29	18·66	74·89	100·28
4 NMNH 105681	4·67	0·22	23·00	73·41	101·30
5 Theory			25·98	74·02	100·00
6 Angelelli and Gordon	7·24	1·73	18·18	72·62	101·49*

* Includes 1·48% CaO, 0·24 insol. Sum originally given in error as 101·25.

For analyses 1-4, CaO and MgO present only as traces, accuracy of data ±4% relative.

In summary, sanmartinite is quite variable in composition. New analyses give the most zinc-rich composition known to date. There is evidence of a solid solution series to ferberite, but no evidence of any similar solid solution to hübnerite. This lack of a Zn/Mn diadochy is also seen in the helvine group (Dunn, 1976).

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REFERENCES

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