

# THE USE OF SUFFIXES IN MINERAL NAMES

The first hyphenated suffixes to be added to mineral names were used to distinguish polytypes: Frondel and Palache used these for wurtzite in 1950 and Smith and Yoder for micas in 1956. A joint nomenclature committee of the International Mineralogical Association and the International Union of Crystallography formalized these suffixes for polytypes, a modified Gard (1966) nomenclature, in a report published by Bailey in 1977.

Levinson had meanwhile introduced in 1966 a system of chemical-element suffixes for names of rare-earth minerals, which was revised and extended by Bayliss and Levinson in 1988. The system ("Levinson modifiers") is quite straightforward: a group name (without suffix) is given to a rare-earth mineral that has been identified without detailed chemical analysis of the rare-earth elements, e.g. monazite; a species name (with suffix) is given whenever the rare-earth element distribution has been determined, e.g. monazite-(Ce), monazite-(La), monazite-(Nd), and monazite-(Sm), the suffix indicating the dominant rare-earth element.

Such chemical-element suffixes have also been used in other mineral groups that can contain different substituting elements in one or more structural sites. Passaglia and Gottardi applied in 1973 these so-called "extended Levinson modifiers" to pumpellyite and jugholdite, and Moore in 1978 applied them to jahnsite and whiteite. The latter have suffixes consisting of three elements because solid solution occurs in three structural sites, e.g. jahnsite-(CaMnFe) and whiteite-(MnFeMg).

An earlier (1971) proposed use of an extended Levinson modifier for the naming of the Na-dominant analogue of zippeite had met with heated discussion within the IMA Commission on New Minerals and Mineral Names (now the Commission on New Minerals, Nomenclature and Classification, CNMNC). The choice was whether to name the mineral sodium-zippeite or zippeite-(Na). One member even offered a Solomon-like solution for the problem: write the name as zippeite-(Na) but pronounce it as sodium-zippeite. At that time, the Commission decided on sodium-zippeite, in writing and in word!

Chemical-element suffixes have recently been applied in the revision of nomenclature schemes for several mineral groups: zeolites (Coombs et al. 1997), labuntsovites (Chukanov et al. 2002), arrojadites (Chopin et al. 2006) and epidotes (Armbruster et al. 2006). The suffixes of zeolites (e.g. stilbite-Ca and stilbite-Na) and labuntsovites (e.g. tsepinite-K and tsepinite-Sr) are used without parentheses to indicate extra-framework cations. Application of the suffix-based nomenclature is not compulsory in the revision of mineral groups. As always with nomenclature decisions, the CNMNC adheres to its traditional principle that each case should be considered on its own merits. The many cation sites in minerals of the eudialyte group would cause names like kentbrooksite-(Fe<sup>3+</sup>SiCaOH), and the authors of the report (Johnsen et al. 2003) thus decided on a unique-name system for this group, the example given here being "feklichevite."

Nomenclature revisions of mineral groups sometimes involve the unavoidable disappearance of well-known mineral names, a result not always met with agreement in the mineralogical community: the 2006 renaming of hancockite into epidote-(Pb) was greeted with considerable acrimony and was called "an eternal insult from the IMA" in one editorial in a collector publication.

Certainly, the CNMNC recognizes the value of the amateur mineralogical community and takes seriously the comments voiced in various forums. For many years there have been complaints over the naming of members of several common mineral series (e.g. apatite and columbite) for which chemical analyses (or other tests) are needed to distinguish the correct identity (and name) of the series member. To address this, the CNMNC decided in September 2007 to change the names in a number of mineral groups to suffix-based names, namely apatites, ellestadites, apophyllites, axinites, columbites, tantalites, tapiolites and pyrosmalites. The occasion was also used to tidy up other categories of mineral names that, in fact, did not follow the Commission's own rules:

two-word names, names with superfluous hyphens, and names with incorrect diacritical marks. The complete lists have been published in the *Mineralogical Record*, volume 39 (2008), pages 131–135. Therein it is also stated that the vast majority of the about 500 existing mineral names with prefixes that indicate a structural analogue or polymorph should remain unchanged.

But even before that publication appeared in print, a new problem arose in the apatite group. Because of the existence of a Sr-dominant apatite, previously named "strontium apatite," the new suffix names for the apatites include Ca or Sr in addition to the dominant anion. For example, "hydroxylapatite" is now apatite-(CaOH) and "strontium apatite" is now apatite-(SrOH). However, the recent discovery of an even more Sr-dominant apatite spoiled the game and made it clear that things in the apatite group are a bit more complex. There is indeed not a simple solid-solution series between pure Ca apatite and pure Sr apatite. Intermediate members, such as the existing "strontium apatite" and fluorcaphite (in the F-dominant series), have cation ordering, comparable to the cation ordering in the intermediate-member dolomite in the calcite–magnesite series.

In March 2008 a subcommittee was formed to resolve the nomenclature problems in the entire apatite group, including phosphates, arsenates, vanadates and silicates with the apatite structure. In light of that, perhaps it would be wise to wait some time before changing apatite-group names on specimen labels and in catalogues! Life is not simple, and neither is mineralogy, apparently.

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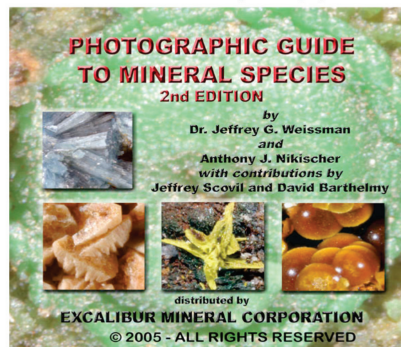
Chairman IMA-CNMNC,  
with help from Anthony R. Kampf,  
CNMNC member for the USA

Many of the cited literature references are available on the CNMNC website:  
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