

Nomenclature of pyroxenes

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Abstract

This is the final report on the nomenclature of pyroxenes by the Subcommittee on Pyroxenes established by the Commission on New Minerals and Mineral Names of the International Mineralogical Association. The recommendations of the Subcommittee as put forward in this report have been formally accepted by the Commission. Accepted and widely used names have been chemically defined, by combining new and conventional methods, to agree as far as possible with the consensus of present use. Twenty names are formally accepted, among which thirteen are used to represent the end-members of definite chemical compositions. In common binary solid-solution series, species names are given to the two end-members by the '50% rule'. Adjectival modifiers for pyroxene mineral names are defined to indicate unusual amounts of chemical constituents. This report includes a list of 105 previously used pyroxene names that have been formally discarded by the Commission.

KEYWORDS: nomenclature, pyroxenes, IMA.

Introduction

THE subcommittee on pyroxenes has, after a thorough evaluation of the group of pyroxene minerals, presented its recommendations for a new classification and nomenclature to the Commission on New Minerals and Mineral Names (hereafter abbreviated as CNMMN). These recommendations have been approved by the Commission by a formal vote (20th May, 1987).

The classification and nomenclature of the pyroxenes have been largely based on their crystal chemistry. In practice the chemical content of the pyroxene formula unit calculated to six oxygens, or to four cations (Vieten and Hamm, 1978), is essential for the classification. This formula unit corresponds to one quarter of the unit cell for the monoclinic pyroxenes and to one eighth of the unit cell for the orthorhombic pyroxenes. The basic principle adopted for amphibole nomenclature (Leake and Winchell, 1978) is to denote principal stoichiometries by generally well-established names, with adjectival modifiers to indicate the presence of substantial substitutions that are not essential constituents of the end-members; this has

been followed as far as possible in the pyroxene nomenclature.

No new names have been introduced in the proposed nomenclature. Accepted and widely used names have been chemically defined by combining new and conventional methods to agree as far as possible with the consensus of present use. Two kinds of adjectival modifiers are used: one to specify a part of the compositional range shown by a mineral that forms a wide solid solution (e.g. magnesium-rich augite and iron-rich augite); the other to specify elemental substitutions that are not essential constituents (e.g. titanian augite). 105 previously used pyroxene names, mostly synonyms, obsolete or almost unused, recommended for rejection, have formally been discredited by the CNMMN.

General publications dealing with the pyroxene group include *Rock-Forming Minerals* (Deer *et al.*, 1978) (hereafter DHZ), the *Special Papers* (ed. Papike, 1969) and *Reviews in Mineralogy* (ed. Prewitt, 1980) of the Mineralogical Society of America, which provide references to the voluminous literature.

