

American Mineralogist, Volume 87, pages 176–180, 2002

Icosahedral domain structure of framboidal pyrite

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ABSTRACT

A new type of framboidal pyrite, with icosahedral domains, is described in this study. Examining the microcrystals on sections of framboids from various localities using a scanning electron microscope, we found pentagonal and trigonal patterns. These are made up of rectangular and fan-shaped domains, and octahedral microcrystals are regularly linked by sharing of edges in each domain. These symmetrical arrangements are interpreted to be different sections of icosahedrally arranged framboids which are composed of twenty tetrahedral domains. Thus some pyrite framboids are not spherical, but are fundamentally icosahedral both in appearance and internal structure. The formation of the icosahedral framboids might be related to the initial nucleation rate and the number of microcrystals within each framboid.