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COMMENT ON MELLUSO ET AL. (2003)

The Ricetto and Colle Fabbri wollastonite and melilite-bearing rocks of the central Apennines, Italy

FLAVIO CAPITANIO

Department of Scienze Geologiche, Università Roma Tre, l.go S. L. Murialdo 1, I-00146 Roma (Italy)

ABSTRACT

The bimodal rock of Ricetto consists of a felsic glassy component, which prevails volumetrically at the top of the rock, and mafic spherules of acicular diopside + anorthite + wollastonite pseudomorph after melilite, which are concentrated at the bottom of the rock. This texture clearly indicates liquid immiscibility, which can be modeled in the compositional space SiO_2–Al_2O_3–MgO–CaO and Al_2O_3–CaO–(FeO_T + MgO). The spinifex and dendritic forms are due to quenching from a melt at temperature of 1000–1100 °C: melilite was the first phase to crystallize and the subsequent rapid cooling caused its breakdown to a more stable assemblage. The strict chemical similarity between the rock under study and the surrounding siliciclastic sandstones, together with the results of ^{14}C radiometric analysis on coal fragments found at bottom of the convex central part of the body, demonstrate that the rock of Ricetto is a man-made pyrometamorphic product. The genetic attribution of the Colle Fabbri occurrence to pyrometamorphic phenomena somewhat similar to Ricetto is difficult to be asserted, as the crystallization history at Colle Fabbri has been much more complicated than at Ricetto. The common presence of melilite and wollastonite cannot account for a direct comparison between the Ricetto and Colle Fabbri rocks, as conspicuous mineralogic, petrologic, and geologic differences exist between these two occurrences.