

Pink "Pseudomorph" after Plagioclase from the Takakumayama Granite, Kagoshima, Japan

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Pink "pseudomorphs" after plagioclase of up to about 5 mm in diameter were found in granodiorite from Takakumayama, Kagoshima, Japan, and were studied by chemical and X-ray analyses. As they are surrounded by relatively flat planes and are easily singled out from the host rock, they appear as pseudomorphs after plagioclase to the unaided eye. Quantitative variations in chemistry were visualized using an X-ray analytical microscope. Elemental image of Ca showed distinct normal zoning, probably due to abrupt change in growth conditions. There were three zoned regions in the plagioclase: (1) an unzoned region in the core, (2) a dusty zoned region in the mantle, corresponding to the pink altered mineral found in hand specimens, (3) and an oscillatory zoned region in the rim. The constituent of this pink altered zone was identified as smectite with a characteristic basal spacing of 1.53 nm under air-dried and untreated conditions. The texture of plagioclase with pink altered mantle is quite similar to the plagioclase with dendritic mantle which underwent magma mixing (Hibbard, 1981). The alteration is associated with defects or dendritic texture which are abundant in the mantles, but absent in the cores and the rims. It is postulated that the alteration resulted from the action of externally derived hydrothermal fluids, which gained access to the defects or dendritic texture in the plagioclase through now sealed microfractures, formed by crystallization during cooling of the Takakumayama granite. These descriptive mineralogy of the pink "pseudomorph" of smectite after plagioclase imply the abrupt mixing of mafic and felsic magma followed by hydrothermal alteration.