

Schistosity is accentuated by thin segregation bands of alternatively Quartzo-Feldspathic and Micaceous minerals, formed by local concentrations of individual minerals during chemical reconstitution. Garnets are skeletal and Albites are fresh. Inclusions of Epidote common. The altered Chlorite exhibits flaky nature. It is assumed that this rock is formed by low grade regional metamorphism of pelitic sediments and belongs to Albite-Epidote-Amphibolite facies.

Fine grained Gneiss possesses a well defined linear arrangements of the minerals. Inclusions of Plagioclase inside the Microcline grains seem to indicate metasomatic replacement. Feldspar show hydrothermal alteration and Quartz shows considerable grain size variations. Bending of the Micas is another metamorphic feature. The presence of Hornblende indicates progressive metamorphism. Microcline shows perthitic structure due to unmixing of soda- and potash-rich material. The rock is a derivative of Quartzo-Feldspathic material which has undergone regional metamorphism.

Meta-Gabbro is consisting mainly of Actinolite which is altered from Pyroxene. Biotite is giving secondary alteration to Chlorite. Clino-Zoisite is found to be derivative of Plagioclase. Near the contact of Micaceous Phyllitic Schist, Chloritoid is present and the amount of Quartz and potash Feldspar is increasing towards the fine grained Gneiss. Ore-microscopic studies indicate the presence of Pyrite and Phyrrotite along with Ilmenite. This rock might have formed from original Gabbroic composition when mixed with aluminous rich pelitic sediments.

Bending of twin planes in Plagioclase, twisting of Muscovite in Grob Gneiss indicate effects of stress and strain. Under high pressures Biotite has become unstable in lowest temperature facies, giving rise to Chlorite. The source material might be Granitic in composition with rich content of Iron. The rock belongs to Quartz-Albite-Chlorite sub-facies.

Results of trace and major element studies point out that in all rocks, the correlation between K and Rb, Ca and Sr, K and Ti is normal.

Geology of Birkfeld Area (East-Styria, Austria)

Between Lat $47^{\circ}24'12''$ — $47^{\circ}22'19''$ and Long. $15^{\circ}36'48''$ — $15^{\circ}38'48''$

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A b s t r a c t

The mapped area consists of five formations; each is different in structure and lithology. The unit 1 consists of epizonal quartzite, with quartz, muscovite and small amount of alkali feldspar. The unit 3 which consists of augengneiss, phyllite and phyllonite rocks, is thrust over unit 1. It is possible to observe two kinds of crystal generations, one is probably pre-Alpidic (microcline and oligoclase), and the other was recrystallized during Alpidic time (albite); it is from epizonal metamorphism. Intercalated in the unit three, like tectonics scales, is the marble (unit 2), which is composed essentially of calcite and muscovite; this rock belongs to the epizonal metamorphism. The unit 3a amphibolite, appears as narrow band, and is formed by hornblende, alkali feldspar, clinozoisite, quartz, garnet, calcite and abundant sphene; from our point of view, this body could be an old basic rock, connected with some old intrusive rock; it belongs to the epi-mesozonal metamorphism. Superimposed over the unit 2 is the fine grained gneiss (unit 4) consisting of quartz, biotite, muscovite, garnet and alkali feldspar. The mineral association belongs to the "Quartz-Albite-Epidote-

Almandine" subfacies of the Greenschist facies. Unit 5; graphite, amphibolite, garnet-chlorite-quartz-schist is thrust over unit 4; the metamorphism of this unit could belong to the "Quartz-Albite-Epidote-Almandine" subfacies of the Greenschist facies; but in the overthrust zone, we can recognize retrogressive metamorphism.

The age of the Quartzite and Marble could be Triassic or Paleozoic, and the rest of the other formations are Precambrian or Paleozoic.

The general structure is dipping towards south-west, and according to the general description of the different mesoscopic subfabrics, the unique structural elements, more or less constant in all domains, are: the S-planes and the "b" lineation. For these reasons, this area of investigation is homogeneous, with respect to these fabric elements.

The microfabric analysis has shown certain transverse foliation in the units 3 and 4, ascertaining the action of secondary tectonic movements.