A PECULIAR MS-PG ASSOCIATION IN A CHLORITOID-BEARING MICASCHIST

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A peculiar association of Ms, Pg and Cld occurs in a porphyroblast-bearing Ms and Grt micaschists from the Greiner Unit (Eastern Alps, Italy).Two different metamorphic stages can be recognised in this rock: 1) a syn-kinematic crystallisation of Cld and Ms along an early foliation S1; 2) the development of a crenulation cleavage (S2) associated with the growth of chlorite (Chl) and porphyroblastic Grt and Ms along S2. Both Grt and Ms porphyroblasts show inclusion trails of Cld, quartz and ores, which are parallel to S1. Furthermore, Ms porphyroblasts include Pg domains, which are parallel to S1, display a rectangular stumpy shape in thin sections and are elongated nearly perpendicular to the Ms (001) basal plane while adopting almost the same cleavage trace.An HRTEM/SAED/AEM study of the Ms/Pg single crystals indicate that: 1) both are 2M1 polytypes in structural continuity; 2) the Na-rich Ms and to a lesser extent the K-rich Pg are structurally and compositionally modulated along the layers as inferred from layer-thickness variations; 3) each type of coherent Ms or Pg domain minimises total elastic strain through aligning inclined to (001); 4) the angle between [00l]*Pg and [00l]*Ms varies from 0 to 5° to reabsorb the layer-thickness misfit. Such resulting tweed texture suggests a further, spinodal-like decomposition inside the Ms-Pg solvus, also related to the local destabilisation of Cld.