Exsolution and ordering textures in feldspars of high-grade Sri Lankan rocks.

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The feldspars of the granulite- and amphibolite-facies rocks of Sri Lanka exhibit unusually clearly developed exsolution and ordering textures. Because in most cases no interaction with a late fluid phase occurred, the exsolution morphology as acquired by solid-state coarsening is preserved. The textures represent non-equilibrium states which were frozen in during cooling and, therefore, bear information on the P — T history. The feldspars were investigated by a combination of light microscopy, transmission electron microscopy, microprobe analysis and single crystal (precession) methods. Depending on bulk composition, exsolution in alkali feldspars produced mesoperthites, string perthites and film perthites, which are characterized by a primarily coherent intergrowth as shown by HRTEM. Perthites with primarily incoherent intergrowth are rarely found. Peristerite exsolution is observed in the submicroscopically twinned oligoclase lamellae of perthites. Exsolution in K-bearing plagioclases produced various types of antiperthites. They differ with regard to morphology as well as mutual orientation of the exsolved Or-rich phase in the plagioclase matrix. Huttenlocher intergrowth occurs in continuously inverse-zoned plagioclases. Investigation by TEM reveals periodic antiphase domain boundaries in the An-poor phase of Huttenlocher intergrowth. Ordering in K-feldspars is frequently controlled by stress. It typically produces a zonation, with microcline cross-hatching in the rim and orthoclase tweed-texture in the core of K-feldspar grains. The exsolution events occurred at different stages relative to deformation and recrystallization.