INTERPLAY OF PROCESSES OF MINERAL TRANSFORMATIONS, STRAIN RECOVERY AND RECRYSTALLIZATION IN PELITIC ROCKS.

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Microstructural evolution of potassium white mica and chloritic minerals in a prograde sequence of pelitic rocks (illite crystallinity indices = 0.17-0.58¢X) from the Gaspe Peninsula, Quebec was investigated by TEM techniques.K-mica and chloritic minerals charastically occur as small crystals with high defect densities in diagenetic rocks. K-mica is dominated by the 1Md polytype. Bending of layer packets is common and often associated with dislocations and low-angle boundaries (LAB). Elimination of defects is in part due to transformation from corrensite to chlorite. Crystal size increases and defect density and randomness of crystal orientations decrease significantly with increasing grade. Aggregation of medium-size crystals, coalescence of layers associated with dislocations and LAB, neoformation of small crystals sandwiched between strained crystals, and embracement of large, defect-free 2M by small 1Md K-mica crystals occur in anchizonal rocks. Layer bending, dislocations, and LAB are much more abundant in K-mica than in chlorite. Epizonal rocks are dominated by large, defect-free crystals (2M muscovite) and high-angle boundaries.The data suggest that the size and defect state of Gaspe K-mica and chloritic minerals are modified by strain recovery and phase transformations in diagenetic rocks, and by layer coalescence, neoformation, and polytypic transitions associated with recrystallization in syntectonic prograde metamorphism.