

Sm-Nd Data from Basement Rocks of the Romanian Carpathians

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Basement rocks of the Carpathian fragments consist of polymetamorphic lithotectonic assemblages and granitic rocks. Metamorphic rocks can be arbitrarily divided into a carbonate lense-bearing assemblage and a gneiss-granite carbonate-free assemblage. Both assemblages recorded a general medium pressure and local subsequent low-pressure medium- to high-grade T-metamorphism.

Eight samples from non- or variably retrogressed rocks of the medium to high grade lithotectonic assemblages yielded narrow ranges of $\epsilon\text{Nd}_{(0)}$ and T_{DM} values from -13.1 to -15.2 and from 1.89 to 2.07 Ga, respectively. Five other samples yielded less negative $\epsilon\text{Nd}_{(0)}$ values of -10.5 and -13.5 and younger T_{DM} with values of 1.62 to 1.95 Ga. Associated granites yielded two groups of values. Four samples with T_{DM} between 1.56 and 1.76 Ga and $\epsilon\text{Nd}_{(0)}$ values between -8.4 and -9.9 may suggest juvenile material strongly contaminated by the local crust. In contrast, three granite samples with T_{DM} values ranging from 1.77 to 1.90 Ga and $\epsilon\text{Nd}_{(0)}$ values between -11.1 and -14.2 suggest a largely anatectic origin. $\epsilon\text{Nd}_{(0)}$ of -14.3 and T_{DM} of 1.88 Ga obtained from a phyllonite sample are in the same range as the gneiss and micaschist lithologies; two granitic phyllonites show $\epsilon\text{Nd}_{(0)}$ values of -10.3 and -10.7 and T_{DM} values of 1.58 and 1.63 Ga, similar to the intact granites intruding the medium-grade crust.

The most negative $\epsilon\text{Nd}_{(0)}$ and the oldest T_{DM} were obtained from both carbonate and carbonate-free lithotectonic assemblages, which suggest the creation of a relatively homogeneous crust at about 2 Ga. The less negative $\epsilon\text{Nd}_{(0)}$ and younger T_{DM} of some lithologies are in the same range as the associated granites. This may indicate that juvenile material was locally added to the originally homogeneous crust.