295 °C range by stepwise raising the baking temperature and the data were plotted in the Arrhenius diagram. The arrangement of points proves very great change of Ar release properties in the 145 – 295 °C temperature range. This infers that Ar release is caused by a low temperature process, the change of the mineral structure of chemistry. Using the method presented here 7.56 ± 0.17 Ma, regarded as minimum age and similar to the Ar/Ar isochron age (7.78 ± 0.07 Ma) is determined for Hegyestű.

The result presented here point to the importance of checking the suitability of leucite-bearing rocks for K/Ar dating, and simple methods are given for this control.

Parameters of phase transitions in the mantle and its influence on mantle convection

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Reconstruction of the mantle flows within the mantle is essential for understanding of the Earth evolution. A temperature and pressure increase in the mantle causes phase transitions and related density changes in its material. The transition boundary in the pressure–temperature phase diagram is determined by the curve of phase equilibrium. If the slope is nonzero, a phase transition in hot ascending and cold descending mantle flows occurs at different depths and, therefore, either enhances (gamma>0) or slows down convection (gamma< 0). Endothermic phase transition at a depth of 660 km in the olivine partially slows down mantle flows. The mantle material has a multicomponent composition. Therefore, phase transitions in the mantle are distributed over an interval of pressures and depths. In this interval, the concentration of one phase smoothly decreases and the concentration of the other increases. The widths of phase transition zones in the Earth’s mantle vary from 3 km for the endothermic transition in olivine at a depth of 660 km to 500 km for the exothermic transition in perovskite, and the high-to-low spin change in the atomic state of iron takes place at a depth of about 1500 km. We present results of calculations for 2D and spherical models, demonstrating the convection effect of phase transitions as a function of the transition zone width. Transitions of both types with different slopes of the phase curve and different intensities of mantle convection are examined. The mixing of material under conditions of partially layered convection is examined with the help of markers. We analyze 2D and 3S mantle flow models with strong viscosity variations and phase transition to investigate this joint effect. For 2-D models we employ the generalized Moresi method. The 3S models are calculated with the CITCOM code.

Ore microscopy, EPMA, and X-Ray Diffraction studies on Hamehkasy-1 and KorKora-1 iron deposits western Iran

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Hamehkasy-1 and Korkora-1 are two iron deposits in Western Iran. Hamehkasy iron deposit is situated in the Sanandaj-Syrjan zone. It consists of two major economic indices and several sub-economic minor indices. Hamehkasy-1 is the largest index and is located to the north of Hamehkasy-2 at distance of 400 m. This ore body is being exploited at present. Korkora-1 iron deposit is located in the Oromieh-Dokhtar volcanic belt. It is one of ten indices in the Shahrak mining district. This ore body is the largest deposit in the area. Magnetite is the main ore in these deposits, but hematite, pyrite and goethite are present, too. For study magnetite in these ore bodies we used ore microscopy, EPMA and XRD methods. X-ray powder-diffraction data were obtained using: magnetite ($Mg_{0.04} Fe_{2.96} O_4$), hematite (Fe_2O_3), quartz (SiO_2) are common minerals, on records from Hamehkasy-1 samples we report magnesioarfvedsonite ($(Na,K)_3(Fe,Mg,Al)_5Si_8O_{22}(F,OH)$) for the first time in this deposit. In Korkora-1 samples the common minerals are: magnetite ($Fe_{2.92}O_4$), hematite (Fe_2O_3), goethite ($Fe^{+3}O(OH)$), clinocholore ($(Mg,Fe,Al)_6(Fe,Cr)_4O_{10}(OH)_8$), and hydrohematite ($Fe_2O_3,xH_2O$). Ore microscopy studies: in these studies we found magnetite in Hamehkasy-1 deposit which consists of high exolution but in Korkora-1 exolution in magnetite is rare. Magnetites in samples of each deposit were characterized by (EPMA) studies.

Camptonites from the Ditrău Alkaline Massif, Romania: Geochemistry and petrogenesis

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Camptonite dykes, 20 cm to 2 m wide, occur at the northern part of the Ditrău Alkaline Massif [DAM] (Eastern Carpathians, Romania), intersecting granitoids, syenitoids and hornblendites. Based on their low SiO_2 and high alkali, TiO2, LILE and LREE content, high Yb/Nb, Ti/V, (La/Yb)N ratios, Zr/TiO_2 vs. Nb/Y distribution, nepheline and olivine normative composition they are defined as silica- and alumina-undersaturated, alkaline basic rocks and basanitic in composition. The Mg#, Cr, Ni, Co and Sc concentration, and low S.I. and high D.I. values of the DAM camptonites indicate that they could be fractionates of primary melts. Based on strongly incompatible trace element composition the DAM camptonites derive from an OIB mantle source containing HIMU and EM I mantle components. The high LREE and low HREE content of the DAM camptonites (La/Yb=15-24) may indicate both a metasomatised mantle source for the magma generation and a garnet lherzolite source by very low degrees (~1-2 %) of partial melting. The latter mean that the camptonite magma must have originated at a great depth, around 60-80 km.

Ophiolites in the Dinarides and Hellenides: the contribution of radiolarian biochronology to the understanding of their formation and emplacement

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Mesozoic radiolarian biochronology has been essential in the understanding of the timing of formation and emplacement of remnants of ancient ocean basins in the Alpine-Mediterranean orogens. The first descriptions and biochronologic assessments of radiolarian faunas of the late 1970ies in the Helledides and Dinarides depended on biostratigraphic calibrations from Deep Sea Drilling Sites and on the first zonations established in Western North America, that were not adequate for the area. In the early 1980's, as the first European Jurassic-Cretaceous radiolatian zonations were established, the dating of radiolarian-bearing sediments associated with basalts and ophiolitic mélanges became possible. The age assignments have been continuously refined since. The discovery of Triassic radiolarites associated with MORB-like basalts in the late 1980's considerably changed the interpretations. Now, a wealth of biochronologic work has been published in the last 3 decades. For this report we have revised data from NW-Croatia, Serbia, Albania, Northern Greece, Othris, Evvia, Argolis, in an attempt to produce a coherent picture of all this data.

Radiolarian biochronology established in oceanic sediments associated with ophiolite belts in the Dinarides and Hellenides reveal 3 age clusters: Middle to Late Triassic, Middle Jurassic and Late Middle to Late Jurassic. Early Jurassic ages are extremely rare. Triassic ages have been found in oceanic sediments, chiefly radiolarites, associated with MORB-like