that the samples from Milos and Santorini lie on a common mixing line between atmospheric and mantle-derived helium, with a $^3He/^4He$ ratio of 5×10^{-6}, suggesting common origin. The common helium ratios of Milos and Santorini may be produced by contamination with radiogenic ^4He and by regional homogenization on the way from the mantle to the surface. Although $^3He/^4He$ ratios of Milos and Santorini are high they are about one half of typical ratios of mantle helium found in volcanic gases and rocks from oceanic ridges and island arcs. Consequently, the relatively low $^3He/^4He$ ratios can be considered as a characteristic feature of this volcanic area. Elemental abundance patterns of the analysed gas samples indicate that Ne, Ar, Kr and Xe are recycled atmospheric noble gases dissolved into ground water.

THE GARNETITE FROM SERIFOS

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Recent investigations on the metasomatic aureole of Serifos island, resulted in the delineation of the lithological zoning as well as in the sequence of metasomatic paregeneses:

Magnetite – Hedenbergite – Epidote – Garnet – Quartz

Garnet – Epidote ± Hedenbergite (± Actinolite) – Quartz ± Magnetite

Garnet – Epidote – Albite – Quartz ± Hedenbergite

Hematite – Barite – Fluorite – Limonite – Siderite – Calcite

The observed thicknesses of the individual metasomatic zones range from 5 to 20 m.

In close proximity to the granodiorite (within 20-100 m from its margins), subzones with the parageneses Garnet (Andradite) – Epidote ± Actinolite ± Hedenbergite ± Quartz ± Albite were locally identified within the individual metasomatic zones. Segments of these subzones with thicknesses ranging from a few metres to a few tens of metres (Ag. Marina, Tsilipaki etc.) consist almost exclusively of Garnet (> 85%) with subordinate amounts of epidote, hedenbergite, feldspar and quartz. The size of such segments appears locally to be quite significant. For examples at the locality Ag. Marina an outcrop of dimensions 450 x 120 x 40 m has garnet contens in the order of 25 to 30% with a garnet content, in individual zones of 1 to 8 m wide, of more than 85%.

The garnets occur often as idiomorphic crystals up to 10 cm, but mainly as rough crystalline rock. The colour is mainly reddish-brownish often unfolding zoning.

The mineralogy of the garnetite was studied opticaly, by X-ray diffraction and microprobe analysis.

It is a typical skarn garnetite with andraditic garnet composition. According to microprobe analysis the garnet composition is:

Andradite	$(Ca_3Fe_2^3+Si_3O_{12})$	: 98–71%
Pyrope	$(Mg_3Al_2Si_3O_{12})$	: 0–1%
Spessartine	$(Mn_3Al_2Si_3O_{12})$	: 0.2–1.5%
Grossulare	$(Ca_3Al_2Si_3O_{12})$	: 0.2–28%
Almandine	$(Fe_3^2+Al_2Si_3O_{12})$	: –

Optical properties, density and lattice constants were determined and are in good agreement to each other.

In order to determine the application potential of the garnetite of Serifos a sample wes tested as industrial mineral by the Battel method.

The possibility to use the garnetite as industrial mineral is discussed.

SUBMARINE HYDROTHERMAL ALTERATION OF BASALTS AND DOLERITES (ZEOLITIC FACIES) IN THE INTERMEDIATE UNIT OF NORTHERN ARGOLIS (PELOPONNESUS, GREECE)

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In nothern Argolis (N. of Epidaurus) in the inner part of Hellenides, the ophiolitic complex is composed of three superposed tectonic units: a) The Lower which is a sedimentary ophiolitic «mélange»; b) An Intermediate volcanic unit and c) An Upper ophiolitic tectonic «mélange».

The intermediate volcanic unit is composed of a lower massive dolerite and an upper basaltic pillow-lava, both of MORB tholeiitic affinity.

In this study the examination of secondary mineralogical assemblages shows a probable hydrothermal origin. This metamorphism is characterized by the remplacement of the original minerals by secondary minerals such as: smectites, celadonites, albites, chlorites, sphene, (Na, Ca) zeolites, ferriferous pumpellyites, which also appear in fractures, or as fillings of voids.

These mineralogical assemblages are the result of a submarine hydrothermal alteration with temperatures between 190 to 200°C and low pressures ($P \leq 1$ Kb).

These thermodynamic conditions are characterized by the association of laumontite-ferriferous pumpellyite in the dolerite, also the presence of smectites-celadonites associated with various (Na, Ca) zeolites in the basaltic pillow-lavas, suggest temperatures less than those in dolerites.