



High pressure metamorphic terrain in the NW Alborz, Iran: the Shanderman Complex

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New high-pressure metamorphics have been discovered in the Talesh Mountains region, Western Alborz, Iran. This is the first report of high-pressure rocks in the entire Alborz belt.

This orogenic belt is located in the northern Iran, between the city of Teheran and the South Caspian basin. The Alborz belt originated during the Cimmerian orogenesis due to the collision between Cimmerian block of north Iran and the southern Eurasian margin. The Shanderman Complex is located north of Rasht in the southern part of the Talesh Mountains, western Alborz, Iran. This complex has been previously interpreted as an ophiolitic melange related to the Paleotethys suture, which might represent the lateral equivalent of the ophiolites of the Mashad and Aghdarband area in the eastern part of the Alborz belt.

Two different rock associations have been distinguished in the Shanderman complex: intermediate to ultramafic unmetamorphosed intrusives and high pressure metamorphics consisting of micaschists and well preserved metabasitic eclogites. These high-pressure metamorphic are here described for the first time. Field observations have revealed that micaschists and eclogites constitute a crystalline basement unit, later intruded by intermediate to mafic intrusives, rich in ultramafic cumulates. Micaschists and eclogites recorded at least two main deformational phases, while the intrusives are almost undeformed. Decimeters to several meters thick sinistral sub-vertical shear zones crosscut both the metamorphics and the intrusives, causing the serpentiniza-

tion of the ultramafic cumulates. The petrology of the Shaderman eclogites suggests a P of equilibration exceeding 1.7 GPa and T between 600 and 700°C. This indicates depth of equilibration of at least 50 km. The relics preserved within garnet cores show blueschists facies conditions that pre-date the eclogitic metamorphism. The evolution from blueschist facies, that indicates low temperature-high pressure conditions, to eclogite facies (medium temperature-high pressure), indicates low temperature/depth gradient, typical of a subduction zone context.

Eclogites may be considered of Cimmerian age, and so related to a subduction zone formed along the active Eurasian margin where the consumption of the Paleotethys ocean, subduction of Iranian crust and possible offscraping of the Eurasian one occurred during the end of the Paleozoic and the beginning of the Triassic. This interpretation is mainly supported by the structural position of the Shaderman eclogites, which is similar to the one of Mashad and Binalood-Virani complex, interpreted as remnants of the Paleotethys collisional suture. Alternatively, the metamorphic complex might be related to older Paleozoic subduction phenomena related to the growth of southern Eurasian margin. In this case they now represent “allochthonous” nappes of Eurasian provenance emplaced during the Cimmerian collision on the Iranian margin. In this context radiometric dating of Shaderman eclogites are mandatory to reveal their geodynamic significance in the frame of the Paleotethys closure. This work was supported with MEBE grants (proposal n. 02-26).