Life most likely appeared on Earth at the stage of its early evolution. It was favoured by the strong greenhouse effect and higher surface temperature of the Earth, which could stimulate the development of thermophilic organisms. Perhaps these conditions persisted until the initiation of an intense exchange between the Earth's mantle and the crust, which could result in sequestration of carbon dioxide through the mantle. Intensive exchange was associated with the formation of igneous melts; as a result of the magmatic evolution also hydrothermal systems appeared and evolved. Even if the Earth's surface at the end of the Archaean (2.5 billion years ago) was significantly cooled, hydrothermal systems could still support conditions conducive to the development of life. The question arises as to how the hydrothermal system worked at the end of the Archean. Was it similar to later, younger, or its characteristics was completely separate. In order to get answers to such questions, a plutonic, granite massif from the Indian Dharwar craton, 2.5 billion years old, was selected. This massif has numerous alterations resulting from the impact of hot and very hot solutions of a mantle or a crust-mantle origin. The duration of action of these solutions was not dated so far. The project envisages the reconstruction of the composition of these solutions on the basis of studies on the chemical composition of minerals, the composition of their domains formed as a result of igneous and hydrothermal crystallization, and the dating of hydrothermal domains. Only some minerals give this opportunity. One of them is titanite ($CaTiSiO_5$). It is a magmatic mineral that can be transformed by reactions with hydrothermal solutions. It is also an interesting mineral in terms of dating. The numerous trace elements that are able to be incorporated into the structure of titanite allow to reconstruct the crystallization and recrystallization reactions. Among them, trace elements such as U-Pb give the opportunity to determine the time of crystallization and recrystallization of domains within titanite mineral. Research in high-resolution microscopes may show the morphology of the alteration zones and facilitate in situ dating of these zones, i.e. they allow to determine the time of their crystallization, and the time of the subsequent hydrothermal reaction. Studies on titanite in combination with data obtained for other minerals of this massif (in term of their crystallization and recrystallization process) can show whether the Dharwar massif was indeed changed by Archaean solutions (fluids). If these were Archaean fluids, it is possible to answer how the hydrothermal system occurred at that time and consistently, it differed from the younger hydrothermal system.

Fig. 1. Late-Archean granitoid Closepet in southern India (picture above). In the microscale, the granite is no less impressive (picture below) - the visible zonation (indicated by arrows) of large titanite crystals suggests the intense interaction with hydrothermal solutions, presumably about 2.5 billion years ago.