

## PREFACE

### Crustal Research in Turkey: Geochemical Perspective

The idea for this special issue grew from the National Geochemistry Symposium which has been regularly held since 2004 (1<sup>st</sup> National Geochemistry Symposium: 18–21 November 2004, 2<sup>nd</sup> National Geochemistry Symposium: 02–04 November 2006, 3<sup>rd</sup> National Geochemistry Symposium: 16–18 October 2008), and hosted by the Bursa Testing and Analyses Laboratory (BUTAL) of the Scientific and Technological Research Council of Turkey (TÜBİTAK). The aim of these meetings was to bring together the geochemists community, to present and discuss the recent geochemical studies as applied to various disciplines of earth sciences. This special issue is the product of the 2<sup>nd</sup> National Geochemistry Symposium which enclosed several sessions covering a broad spectrum from fluid geochemistry in relation to geothermal systems, through biogeochemistry utilized in mineral exploration, to litho-geochemistry (whole-rock and mineral chemistry) in regard to petrogenesis and mineralization. Various aspects of geochemistry (major and trace element geochemistry, as well as isotope geochemistry and geochronology) were involved in the contributions presented in this symposium. This special issue is a compilation of the contributions concerned with litho-geochemistry, and is focused on three basic themes:

1. Litho-geochemistry of volcanic rocks (2 contributions: *Güçtekin and Köprübaşı*, *Temizel and Arslan*) and of mafic-ultramafic suites (1 contribution: *Sarıfakioğlu et al.*)
2. Geothermochronology of intrusive suites (2 contributions: *Boztuğ et al.*)
3. Geochemistry and isotope geology of mineral deposits (2 contributions: *Bozkaya and Gökçe*, *Abdioğlu and Arslan*)

Regarding the first theme, the first paper, by *Güçtekin and Köprübaşı*, discusses the whole-rock geochemistry of the Hasandağ and Erciyes volcanoes, the two important members of the collision volcanism in central Anatolia, in terms of the petrogenetic process involved (melting, magmatic fractionation, crustal

contamination), the source region of magma generation, and the possible mechanisms of melt production and eruption. The second paper, by *Temizel and Arslan*, is concerned with the mineral and whole-rock geochemistry of the post-collisional Tertiary volcanism in the Ulubey (Ordu) area in the Eastern Pontides; within the framework of the current debate about the timing and the mechanism of collision in the Eastern Pontides, *Temizel and Arslan* discuss the nature of the volcanics, the role of high to shallow-level fractional crystallization in the evolution of volcanism, and the nature of the mantle source along with the possible mechanisms of source melting. The third paper, by *Sarıfakioğlu et al.*, focuses on the whole-rock and mineral chemistry of the mafic-ultramafic cumulates of the mantle-crust transition zone in the Orhaneli (Bursa) ophiolite (İzmir-Ankara-Erzincan ophiolite belt). *Sarıfakioğlu et al.* report the field, petrographic and geochemical aspects of Orhaneli ophiolite and, based on the correlation with ophiolitic occurrences from several tectonic settings, argue for a SSZ (Supra Subduction Zone) origin for the Orhaneli ophiolite within the tectonic realm of the northern branch of the Neotethys.

Regarding the second theme, the first paper, by *Boztuğ et al.*, is concerned with the quantification of the cooling and exhumation history of the Kaman-Kırşehir region intrusives in central Anatolia, utilizing single-zircon  $^{207}\text{Pb}$ - $^{206}\text{Pb}$  evaporation ages, hornblende  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  ages and apatite fission-track ages supplemented with track-length data. The age data is also complemented by geothermometric-geobarometric data obtained via the EMPA analyses (Electron-Probe Micro-Analyses) relevant to mineral chemistry. The results are interpreted in terms of emplacement, cooling, and exhumation ages of the intrusives, along with the uplift rate. As another contribution to the geothermochronology of the central Anatolian intrusives, *Boztuğ et al.* report, in the second paper of the theme,  $^{207}\text{Pb}$ - $^{206}\text{Pb}$ ,  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  and fission-track data recorded on the Karaçayır syenite in east-central Anatolia (north of Sivas). The data appear to be in agreement with the findings from the Kaman-Kırşehir

intrusives in the western part of the central Anatolian region.

Regarding the third theme, the first paper, by *Bozkaya and Gökçe*, concerns the lead and sulfur isotope composition of the Koru (Çanakkale, Turkey) lead-zinc deposits associated with the Tertiary volcanic rocks of the Biga Peninsula. The isotope data are discussed in terms of possible sources of sulphur and lead in ore minerals, and the model age of mineralization. The second paper, by *Abdiođlu and Arslan*, focuses on the mineralogy and geochemistry of the hydrothermally altered rocks of the Kutlular (Sürmene) massive sulfide deposit associated with the Upper Cretaceous volcanics of the Eastern Pontides. The results are utilized in (i) the identification of the alteration zones, (ii) determination of the chemical variations in rock compositions with increasing proximity to ore, and (iii) the mass balance calculations to reveal possible additions to, and/or removal from, the wall rocks during the hydrothermal alteration.

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#### **Guest Editors**

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