

**Neoproterozoic-Early Cambrian,
Late Paleozoic and Late Jurassic
granitoid magmatism on the N
margin of Gondwana, Tsaghkunyats
anticlinorium of Lesser Caucasus,
Central-Northern Armenia**

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Tsaghkunyats anticlinorium in the Lesser Caucasus is characterized by its multistage magmatism, metamorphism and orogeny. As a crystalline basement of South Armenian Microplate (SAM), these and other carbonate facies Paleozoic rocks have traditionally been viewed as continental fragments with Gondwanan affinity. Granitoids play a significant role in this anticlinorium represented with several large plutons and numerous smaller intrusions. These are grouped into (1) granitic gneisses (or migmatite-granite), (2) plagiogranites (or trondhjemite) and (3) tonalitic formation rocks (quartz diorite, tonalite, granodiorite, aplite). Recently, U-Pb ages and geochemical compositions of these rocks have been revised with joint researches, including the RA MES research project [18T-1E227](#). The resulting U-Pb crystallization ages range from Late Neoproterozoic to Early Cambrian (~545-530 Ma) for the granitic gneisses; from Middle to Late Permian (~270-250 Ma) for the plagiogranites; and from Late Jurassic to Early Cretaceous (~155-140 Ma) for the tonalite formation rocks. The granitoids are subalkaline with well-developed calc-alkaline trend on the AFM diagram. All studied samples plot in VAG field on the diagrams of Pearce et al. (1984). N-MORB normalized spidergrams are characterized by increase in LILE and Th, decrease in Nb-Ta, P (except plagiogranites) and Ti, and high LREE/HREE ratios compatible with a continental arc setting. Though all samples are with LREE > HREE, marked negative and positive Eu anomalies are characteristic for granitic gneisses and plagiogranites, respectively, with almost no Eu anomalies in tonalities. All these granitoids are arc-type and their presence may suggest southward subduction of Proto-Paleo-, and Neotethys under SAM of Gondwana during above-mentioned time intervals.