Petrology and geochemistry of Lahijan granitoid according to new findings

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Abstract: Lahijan granitoid pile, east of Gillan Province, petrographically comprises of mostly two group rocks: felsics (granite, porphyry granite and granodiorite) and mafics (diorite) and in terms of magmatic series belong to subalkaline and are mostly calcalkaline. The contact between the pile and surrounding rocks is faulty and includes myllonitic and cataclastic rocks yet there is no metamorphic haloe around it, so it has not intruded them and therefore unlike the previous statements it may not be Triassic in age. The presence of some similarities among trace element behaviors, especially REEs between felsic and mafic groups like, resemblance and enrichment of REE patterns, LREEs steep slope, flat patterns of HREEs, relative enrichment of LFSEs all suggest a common origin for them. The existence of ambiguous characteristics for example Aluminum saturation index (ASI) or molar $\text{Al}_2\text{O}_3/(\text{CaO} + \text{Na}_2\text{O} + \text{K}_2\text{O})$, P behavior, lack of observation sedimentary or basic microgranular xenoliths, abundance of biotite in felsic, hornblende and ouralitised pyroxene in mafic rocks, presence of individual apatite in felsic and lacking of it and low content of $\text{P}_2\text{O}_5$ in mafic rocks, $\text{Na}_2\text{O}/\text{K}_2\text{O}$ wt% ratios, and amount of normative corundum, all propose that Lahijan granitoid is rather hybrid one instead pure I or S types. According to spider and discremenation diagrams, these intrusives belong to an arc setting.

Keywords: Lahijan; granitoid; hybrid; arc.

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