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## Clay mineralogy and geochemistry of the soils derived from metamorphic and mafic igneous parent rocks in Lahijan area

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**Abstract:** The mineralogical and geochemical composition of the soils of three representative pedons formed on basaltic andesite, andesitic basalt and phyllite were investigated. Results by XRF showed that progressive weathering of rocks have been marked by gradual accumulation of Al, Fe, Ti, Mg,  $H_3O^+$  and depletion of Na, K, Ca and Si in the soil; although, predominant clay, loss and gain trend of elements was different on the various rocks. Based on x-ray diffraction analysis, minerals in basaltic andesite and andesitic basalt were similar but, the intensity of mica to smectite or vermiculite transformation for latter was relatively higher than the former. This process revealed the degradation mineral because of two reasons: (i) – smectite and vermiculite increased whereas mica decreased in surface horizons. (ii)–Irregular mixed layer of mica–smectite or vermiculite was present in deeper part (170 cm) of the soils from andesitic basalt but shallower depth (75 cm) of the soils from basaltic andesite. Clay minerals in phyllite were mica and chlorite that stratified with vermiculite. However, the absence of smectite in phyllite might be attributed to more acidic condition or position of the Fe ion in the mineral lattice of chlorite (higher Fe in the interlayer hydroxide sheet)

**Key words:** *Clay mineral, Geochemistry, X - ray fluorescence(XRF).*