Petrography and Geochemistry of Sandstone of the Kamlial Formation, Islamabad Expressway Section, Islamabad, Pakistan

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The Miocene Rawalpindi Group including the Kamlial and Murree formations and the Quaternary deposits are exposed along the Express Highway Islamabad near Korang Bridge. Previously established geological map has been modified during this study which also shows the Quaternary Pothwar clay deposits. This section belongs to the Miocene Murree Formation. The Kamlial Formation, which is the focus of this study contains abundant quartz, which is fractured and oriented as micro-lenses along with K-feldspar such as microcline, micro-perthithe, orthoclase and sanidine, and albite to andesine plagioclase feldspar indicating felsic plutonic and volcanic rocks protoliths. Besides, the presence of pyroxenes and amphiboles also indicate mafic volcanic and/ or plutonic rocks source. Traces of garnet, epidote, chlorite, biotite, muscovite, vermiculite may show metamorphic origin of the clasts. The preferred orientation of the grains and bending in mica indicates that the formation has undergone through deformation due to shearing. Based on geochemistry, the sandstone of the Kamlial Formation is mainly litharenite which shows fluvial depositional environment. It illustrates recycle oceanic island arc tectonic origin and provenance of Himalaya and the Kohistan Island Arc.