

**Geochemical Analysis of Miocene Jhill Limestone in Sona Pass
Area for Steel Industry**

Huzaifa Ahmed¹, Muhammad Shumail¹, and Sumaira Asif Khan^{1*}

¹*Department of Geology, Federal Urdu University of Arts, Science and
Technology Karachi, Pakistan*

**Email: sumaira.asif@fuuast.edu.pk*

This study focuses on assessing the suitability of Miocene Jhill Limestone for industrial applications, particularly in the steel industry. The study area, situated in the west and northwest of Karachi City, Sindh province, Pakistan, near the coast of the Arabian Sea, features exposures of Nari and Gaj Formations, consisting of limestone, shale, and sandstones. Limestone, a sedimentary calcareous rock predominantly composed of calcite, holds significant importance in various industries due to its versatile properties. Geochemical analysis of prepared samples was conducted using X-ray fluorescence spectrometry (XRF). Chemical analyses revealed high CaO content ranging from 49.87% to 53.41%, with an average of 51.96%, indicative of the presence of calcite. Additionally, Al₂O₃ content varied from 0.58% to 1.2%, averaging at 0.778%, suggesting the presence of clay minerals. Fe₂O₃ values ranged from 0.64% to 1.43%, with an average of 0.996%, while SiO₂ values ranged from 2.09% to 4.02%, averaging at 2.8%. The results indicate that the Jhill limestone exhibits high purity and elevated CaO content, making it economically viable for use in the steel industry.