Reconnaissance studies on exploration of placer gold and base metals in district Hangu, Pakistan

Awais Ahmad; Liaqat Ali and M. Shafique
National Centre of Excellence in Geology, University of Peshawar, Pakistan
awaisahmadkhan80@gmail.com

Abstract

Potential areas for mineral exploration can be targeted by using stream sediment geochemistry. The study area (Hangu District) covers the north eastern part of the Kohat Plateau and is dominantly composed of Kohat Formation (Eocene), Kamlial Formation (Miocene) and also Quaternary alluvium. The geochemical analysis of stream sediments in perspective of placer gold and base metals is attempted. The samples collected during field survey includes stream sediments, heavy mineral concentrates (HMC) and Quaternary deposits from different streams in the study area. For this study, concentrations of 10 elements including Au, Ag, Cu, Zn, Cr, Pb, Ni, Co, Cd and Mn were measured using atomic absorption spectrometer (Perkin Elmer 700).

For finding geochemical element dispersion in the study area, the data was statistically evaluated using univariate, bivariate and multivariate analysis. The GIS analysis was carried out on geochemical data to display single element concentration and multi element associations by constructing geochemical maps. The placer gold concentration in HMC samples (.024-.531ppm) was found higher than in stream sediment samples (0.013-0.146ppm) and Quaternary sediments (0.016-0.155ppm). The base metals concentration in HMC, stream sediment and Quaternary deposits samples is low, having mean value of about (.013-0.768ppm). The above data suggests that placer gold and base metals concentration in the study area is poor. It is, therefore, not recommended for economical and commercial scale extraction for Au, Ag and other base metals.