

## **GEOCHEMICAL STUDIES ON GRANITOIDS OF THE MIDTUL AREA, BASTAR CRATON, CENTRAL INDIA**

Yamuna Singh

*Atomic Minerals Directorate for Exploration and Research,  
Department of Atomic Energy, Government of India, Begumpet, Hyderabad-500 016  
E-mail: yamunasingh2002@yahoo.co.uk*

### **Abstract**

The intrusive granitoids of the Midtul area (Survey of India Toposheet No. 65F/1; 18°52'30": 81°09'55"), Bastar Craton, Central India, are commonly non-foliated and two-mica (biotite and muscovite) type, as for example, near Kondapal and Bechupal. The geochemical data reveal silicic nature of the granitoids. The highly variable  $K_2O/Na_2O$  ratios of the granitoids reveal chemical gradation. Plots of  $SiO_2$  vs.  $K_2O$  suggest that they are calc-alkaline and medium-K to high-K type granitoids. They are distinctly ferroan and peraluminous, S-type granitoids, and have formed from partial melting of the crustal metapelitic sources. The emplacement of the granitic melt from which the granitoids of the Midtul area formed appears to have taken place in volcanic arc granite (VAG) and syn-collisional granite (syn-COLG) transitional tectonic settings in a post-orogenic environment, which is consistent with the known tectonomagmatic evolution of the Central Indian terrain.

The available geochemical data and critical trace-element ratios suggest that the melt from which the investigated granitoids of the Midtul area formed was not highly evolved. The fact that the studied granitoids are not sufficiently evolved is further supported by the very low abundances of high-field strength elements (Y, Zr, Nb, La) in them. Because of these geochemical features of the source granitoids, soils/riverine placers derived from them have very low abundances of rare-metals and rare-earths. Accordingly, the investigated granitoids do not seem to be potential hosts for rare-metal and rare-earth-bearing minerals.

*Keywords:* Geochemistry, Granitoid, Midtul, Bastar Craton, Central India.