

## **D-29 Structural control of mineralization in the area north of Kurunegala-Matale**

K V Wilbert Kehelpannala

*(Dept. of Earth Science, Institute of Fundamental Studies, Kandy)*

The area demarcated by a line joining Kurunegala, Hiripitiya, Galewela, Naula and Matale, was studied in order to determine the relationship between the structure and mineral deposits. Assuming that the maximum principal stress was perpendicular to the axial direction of folds, the directions of the principal paleostresses ( $\sigma_1$ ,  $\sigma_2$  and  $\sigma_3$ ) during and just after the final major folding were determined. For this, the large-scale folds of the last major deformation were analysed from a Spot picture (Band 3, Scale 1:200,000) and air photos (scale 1:20,000). The maximum ( $\sigma_1$ ) and least ( $\sigma_3$ ) principal paleostresses were nearly E-W and N-S respectively. Applying the principle that pegmatites and veins form perpendicular to the least principal stress ( $\sigma_3$ ), many E-W pegmatite bodies were recognized from the Spot image and air photos.

Field studies carried out around Keralankadawala, Melsiripura, Mathalapitiya, Dodangaslanda and Talgodapitiya confirmed the presence of E-W pegmatites and veins and identified at least 6 types of mineralizers. These were: (i) zircon-bearing granitic to syenitic pegmatites, (ii) quartz-feldspar pegmatite with mega crystals, (iii) mica-bearing veins, (iv) apatite-mica-bearing veins, (v) graphite veins and (vi) vein quartz.

These suggest that the area studied is a potential mineralized zone. Most of the granitic to syenitic pegmatites were very large, sometimes up to about 500 m long and 35-40 m thick.

Many zircon-bearing mica veins were located around Mathalapitiya and Talgodapitiya.

Apatite-bearing mica veins were also located near Talgodapitiya, and their greenish apatite crystals were very similar to those of the Kawisigomuwa apatite deposits.

Deformational features revealed that the formation of the above pegmatites and veins post-date major ductile deformations and metamorphism. It was observed that the host gneisses of the apatite- and mica-bearing veins have

been altered, forming scapolite and diopside. This alteration is strong evidence for the involvement of externally derived fluids in their formation. This study also showed that the analysis of the direction of the principal paleostresses by using remote sensing pictures can be an important tool for locating pegmatites and vein type deposits.