

Figure 11. Map showing distribution of Wichita granite outcrops, divided into three geochemically distinct classes.

S-type classification. These are the set known by a variety of names that included anorogenic, alkaline, and anhydrous. The source of these rocks appears to be alkali basalt that interacted with an already depleted and dry, lower crustal section. They proposed that this set be called "A-type," and discussed their indices. Table 9 lists these indices, and their values for the Wichita Granite Group. This designation is more useful, and appears to be based on chemical data of higher precision, than the attempt to label the granites as calc-alkaline, as was done by Hanson and Al-Shaieb (1980).

The modal and chemical data of the three classes of Wichita granites are plotted on appropriate diagrams after Loiselle and Wones (figs. 12, 13). Our granites clearly belong to the A-type. Plotting of their normative chemistry in the system  $\text{SiO}_2\text{--NaAlSi}_3\text{O}_8\text{--KAlSi}_3\text{O}_8$  (fig. 14) yields isopleths around which the three-phase triangles discussed with the Carlton Rhyolite may be placed. Gilbert and Myers are developing a specific model for the origins of these liquids. Although the bulk compositions of Wichita granite classes plot most similarly to rhyolites from the bimodal associations noted by Ewart (1979), estimated original alkali feldspar compositions are more like those from Icelandic rhyolites (Ewart, 1979).

### Trace-Element Data

A set of limited chemical data for selected samples was generated by INAA methods, arranged through the courtesy of Salman Bloch, of the Oklahoma Geological Survey. No claim to high precision is made for the values, but they are taken to be indicative of the likely range of concentrations to be found with more intensive effort. Figure 15 reports results for Sc, Zn, Hf, U, and Th over the range of  $\text{SiO}_2$  occurring in rocks of the Wichita igneous province. The striking  $\text{SiO}_2$  bimodality is clear from the figure.

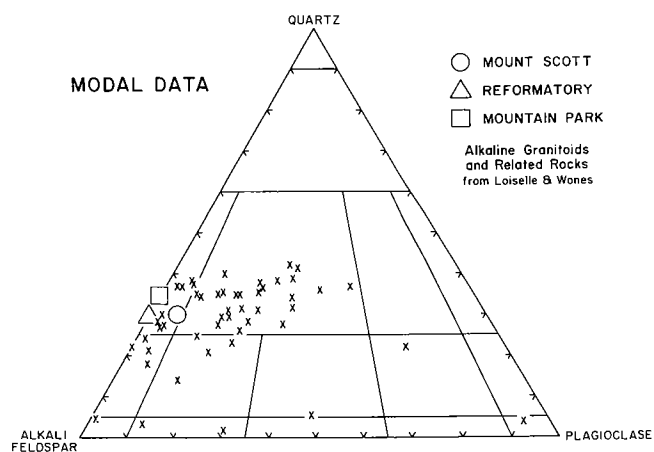


Figure 12. Modal data for the three chemically defined classes of Wichita granites, compared with other A-type granitoids as plotted by Loiselle and Wones (1979; and written communication, 1980).

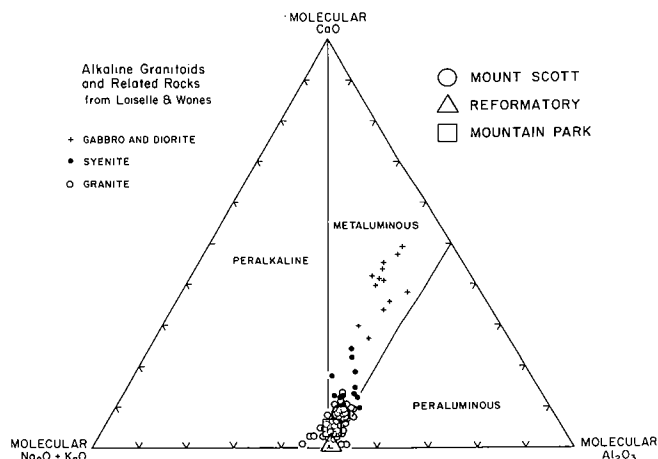


Figure 13. Chemical data for the three Wichita granite classes, compared with other igneous suites with A-type characteristics as compiled by Loiselle and Wones (1979; written communication, 1980).