

APL MICROCOMPUTER APPLICATIONS IN MINERALOGY AND PETROLOGY

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APL is a versatile and powerful language that has long been used with mainframe computers, in interactive terminal programming and data processing. The language is famous for its numerous "mathematical" symbols that operate on large data sets, leading to simpler, shorter, and more easily-written programs than are possible with BASIC and FORTRAN. APL software is being adapted for microcomputer applications of geologic modeling and teaching as well as data manipulation. Microcomputers typically need a graphics board and a math-coprocessor chip to run APL functions and to produce special screen and printing symbols. Press-on overlays for the keyboard show the special symbols without detracting from other use.

An APL software system called MINCALC is being developed that allows interactive storage of data in combination with mineral and rock calculations, and plotting programs. Execution of MINCALC leads users through steps without need for programming or APL language experience. Programs finished or under development for the system include multiple-symbol plots of binary and ternary diagrams, data storage schemes with table printing, a CIPW norm calculator, rock compositions determined after mineral removal or addition, rock compositions determined from modal percentages, simple statistics, and a variety of mineral cation and formula presentations as calculated from their chemical analyses.