to the mountain mass (10^5 m). Standard techniques for study of the crystal to the dislocation level involve use of different etching and decorating methods, optical, electron, and X-ray microscopy, X-ray diffraction, and the electron microprobe. Description of the rock specimen usually includes optical microscopy, petrofabric methods, X-ray diffraction, and chemical techniques. Bulk properties are measured by physical and mechanical tests. The rock mass is commonly described by employing standard field mapping techniques, drilling results, in-situ physical and electrical measurements, and study of aerial photographs. The contributors to Theme 2 make interesting use of many of these techniques, some of unusual nature are mentioned below.

The optical processing of two-dimensional, petrofabric data described by Pincus (1966) is a new approach applicable to the study of phenomena on all scales of observation. The method has been applied previously to the analysis of seismic data. According to the author, a photograph of the subject "is reduced to a transparency that acts as a diffraction grating through which laser light is passed. The frequency distributions of direction and spacing can be taken directly from the resulting two-dimensional Fourier transform." Directional and spatial filtering of the original image is an attractive aspect of the technique. The usefulness of the method is illustrated for calcite twin lamellae spacing and orientation, dimensional grain orientation, and lineations on an aerial photograph.

Seimes (1966) uses X-ray diffractometry to determine the preferred crystallographic orientation in ultra fine-grained Solenhofen limestone. This technique is particularly useful in study of rocks too fine-grained for standard optical analysis.

Attempts to describe rocks quantitatively in terms of indices useful in the systematic exploration of the rock mass are made by several workers.