



Fig. 3. Diffuse reflectance spectra of returned lunar highland rock interior chips (IC) and powders (P) measured in the laboratory [from *Charette and Adams, 1977*]. The spectra are offset vertically with the short horizontal bar indicating the reflectance at that wavelength. The classification scheme referenced here has since been updated by *Stoffler et al. [1980]* (see text).

of rock types, values for the average composition of the lunar crust will become better known.

### 3. SPECTRAL REFLECTANCE STUDIES

Throughout the Apollo era, spectral reflectance measurements were being investigated as an additional tool to determine surface composition remotely through identification of mineralogical components from the spectral analysis of reflected light. Absorption features characteristic of specific rock-forming minerals occur in reflected light from 0.35 to 2.5  $\mu\text{m}$  and are documented and discussed by *Adams [1974, 1975]* and by *G. R. Hunt and J. W. Salisbury (summarized by Hunt [1977, 1982])*. Bidirectional reflectance measurements were made of the lunar surface using telescopic instruments, and diffuse reflectance measurements were made of returned lunar

samples using laboratory spectrometers. At that time, laboratory reflectance measurements were more precise and were possible for broader spectral coverage and resolution than were the telescopic measurements for small areas on the moon about 20 km in diameter. The visible and near-infrared reflectance properties of returned lunar samples were analyzed and compared to extended visible telescopic spectra of small lunar areas in a series of papers by *Adams and McCord [1970, 1971a, b, 1972, 1973]*. A fundamental result of these exploratory studies involving all landing sites was that the telescopic reflectance measurements of undisturbed surface areas correspond directly (within the precision of measurement) to laboratory measurements of returned mature soils. This "ground truth" documentation provided essential verification that reflectance measurements obtained remotely are comparable to