
Factors Affecting Selected Area Electron Diffraction Patterns of Micas*

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* Dedicated to Late Professor W. F. Bradley who amply demonstrated the importance of mica structure to clay mineralogy.

Abstract: Major factors affecting the selected area electron diffraction (SAD) patterns of micas are: lattice properties of the crystal, specimen thickness, orientation of the crystal, properties of the Ewald sphere for electron diffraction, depth of field of the objective lens, and variations in focusing conditions of this lens. Depending on these factors, SAD patterns of $2M_1$ muscovite may display different symmetries. Specimen 'finite' thickness affects the intensity in terms of the 'interference function'. The latter function has been evaluated exactly and the intensity distribution has been calculated along the (hk) rows. The observed intensity variations of (hk) spots indicate that the focusing conditions of the objective lens are rather critical for the symmetry of SAD patterns.

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