

Potassium Potentials in Minerals and Soils Determined by an Electric Field Technique. G.S. HU* and D.L. SPARKS, Univ. Of Delaware.

The heterogeneity of soil and mineral surfaces is well known. The binding energy between a given ion and the surface of a mineral is not homogeneous. However existing technique cannot quantitatively determine the energy distribution. We developed a electric field technique to determine K^+ potential on mineral and soil surfaces. This technique is established according to the principle of static electric field, the law of transformation and conservation of energy and kinetics theories. Our results showed that the release of K^+ was controlled by diffusion and could be described very well by the parabolic diffusion equation for low bonding energy K^+ . However, for high bonding energy K^+ , the release of K^+ was controlled by surface reactions. This was due to the great driving force of diffusion at high electric fields. Potassium potentials on mineral surfaces were distributed according to a Maxwell-Boltzmann type.

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