Use of Scanning Electron Microscopy in Soil Mineralogy. (S09-white142557-Oral)

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Abstract:

Scanning electron microscopy is an important tool for the examination of soils and soil minerals. When using this tool, it is important to critically examine the methods used for sample preparation and the effects these methods have on the data obtained. Many types of data which can be obtained using scanning electron microscopy, each of which needs to be examined separately and integrated together to identify minerals and recognize the importance of data obtained. The strengths and the weaknesses of different types of images can be used to advantage when they are properly considered. The importance of energy dispersive X-ray spectroscopy in the definitive identification of soil minerals will be shown with several examples. Image formation, resolution, and contrast mechanisms may affect the quality of data obtained from samples. The importance of integrating data from the different types of signals obtained from the sample examination by SEM and data obtained for the complete sample by other means such as X-ray diffraction can prevent many misidentifications. Examples will be used to show how to obtain better results more efficiently.

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