

**PITFALLS IN SCANNING ELECTRON MICROSCOPY  
(SEM) STUDIES**

**by**

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**ABSTRACT**

Use of a scanning electron microscope (SEM) and energy dispersive X-ray elemental analysis (EDS) to identify components in materials such as cement paste or concrete is a fairly new type of identification procedure. The identification is based on the presence of the main peaks of particular elements on the spectrum and the ratios among these peaks. However, the size of the analyzed area plays an important role, failure to understand the cementitious systems and the instruments capabilities can lead to misleading and erroneous conclusions. For correct interpretation of the obtained data a good geological background and a knowledge of cement chemistry is needed. In the case of failure investigation, SEM studies should be considered as an adjunct analysis following petrographic observations and engineering evaluations of the particular structure.