

Introduction to SEM/EDX Session Questions and Answers

Q: Can we use SEM or SEM-EDS to identify a stain or discoloration on parts?

A: SEM and SEM-EDS can identify some causes of stains and discoloration on metal parts. SEM can determine if there was a surface change that took place by looking at parts in stained and unstained areas. EDS can determine the elemental composition of a stain if it is ~500nm or thicker, otherwise, the EDS will gather information from underneath the stain. Other methods are available.

Q: What size do parts need to be inspected with SEM?

A: A part being prepared for SEM analysis generally needs to be flat and have dimensions less than 50mm thick and be able to fit in a 120mm diameter circle. Anything bigger than this will need to be cut down to be placed in the small SEM chamber.

Q: Can SEM or SEM-EDS detect plating issues on metal parts?

A: Yes, SEM and SEM-EDS are both great tools to detect plating inconsistencies. These two tools allow us to look at surface appearance as well as determine the uniformity of plating metals.

Q: Is FT-IR or SEM-EDS better for my application?

A: It depends on what information you are seeking; both have a penetration depth >500nm. SEM-EDS will tell you elemental composition but cannot generally be used to identify what substances are present. FT-IR can be used to identify chemical bonds and often identify the materials present; however, this cannot be used for metal identification.

Q: How long does it take to complete SEM scans and SEM-EDS scans?

A: An SEM scan takes one minute to complete once the sample is under the vacuum in the SEM. One SEM-EDS scan takes 1 hour to produce a good elemental map, but a quick scan can also be produced in one minute.