

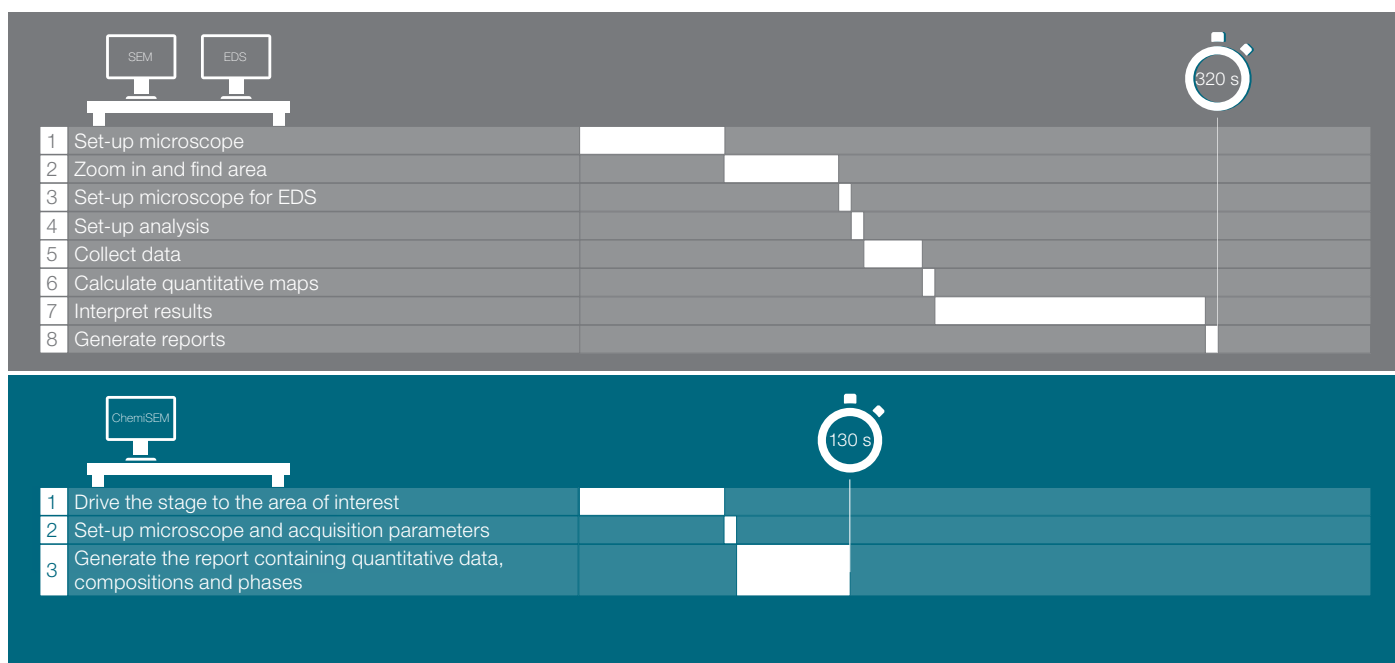
ChemiSEM Technology

An easier, clearer approach to EDS data collection and analysis

In the ever-evolving fields of materials science, analytical chemistry, and modern production environments, the need for faster, more accurate, and more cost-effective analytical tools has never been more pressing.

Energy-dispersive X-ray spectroscopy has played a key role in this endeavor thanks to its sensitivity and versatility. It has even become a technique of choice for many people because it is applicable to an extremely wide range of industries and applications and because it enables visual inspection of materials of interest via SEM imaging.

Over the years, the methodology and technology behind EDS have seen remarkable advancements. The traditional and quite time-consuming approach has given way to a faster, more efficient, and more reliable way of acquiring and processing EDS data: Thermo Scientific™ ChemiSEM™ Technology.



Comparison of the traditional (grey) and ChemiSEM Technology (teal) approaches to EDS data collection and analysis.

The traditional way: A time-consuming and often inefficient journey

Not too long ago, EDS analysis was a time-consuming and complex process that required prior knowledge of the specimen, frequent manual intervention, and multiple steps. Depending on the application and the complexity of the material's chemistry, securing effective results could require multiple data acquisitions.

Some downsides of traditional EDS approaches include:

- **Limited area selection:** Because the analysis was guided by electron imaging feedback, interesting features and useful information were often lost or not analyzed
- **Manual parameter setup:** Acquisition parameters were set manually through multiple adjustments to optimize the data collection process, which required expertise and often led to trial-and-error iterations
- **Multiple screens and data interpretation:** After data collection, the microscopist had to compare data from multiple screens and process information to interpret results, which could lead to inefficiencies and errors
- **Limited visual insights:** Traditional EDS primarily provided elemental information in the form of X-ray dot maps, leaving the user to interpret complex data without a clear visual representation of the sample's composition

ChemiSEM Technology: Speed, precision, and automation

ChemiSEM Technology is a new approach that provides faster results, increased accuracy, and enhanced confidence in data analysis.

Among other improvements, it offers:

- **Informed area selection:** Full integration between ChemiSEM Technology and SEM imaging provides chemical information to help you decide where to collect detailed EDS data
- **Streamlined parameter set up:** The combined interface for SEM imaging and EDS characterization eliminates the need to adjust settings between runs, and presets for each analytical tool make it easy to choose the right one for your work
- **Simplified data interpretation:** Intuitive extraction tools, automated statistical analysis, and precise identification tools minimize guesswork
- **Embedded phase analysis:** The new ChemiPhase feature automatically and visually distinguishes all the phases present in a material and provides the spectrum and composition of each

Live quantitative mapping delivers effective results in the shortest possible time, without sacrificing data quality. Thanks to a wide range of features and tools that solve your problems, it can help you minimize human error and have full confidence in the accuracy of your results.

As the need-it-now world continues to demand faster, better, and more cost-effective solutions, ChemiSEM Technology represents a remarkable leap forward for EDS, making it an indispensable tool for today's analytical challenges.

Learn more at thermofisher.com/chemisem

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