EDAX Octane Elite Ultra EDS System

Model PV6600/UL

Introducing EDAX Octane Elite Ultra – the revolutionary energy dispersive x-ray spectroscopy (EDS) system for compositional analysis in the scanning electron microscope (SEM). The Octane Elite Ultra establishes a new benchmark for EDS systems utilizing a newly developed proprietary windowless 160 mm^2 EDS detector. This not only delivers superior sensitivity to light and heavy elements but provides accurate analytical results at accelerating voltages up to 30 kV, making the Octane Elite Ultra the first windowless EDS detector suitable for everyday use. This unrivaled performance eliminates the need for a secondary EDS detector and ensures that your most demanding application needs are now met.

Benefits

- **One detector for all your EDS applications** – Delivers the accuracy and breadth of applications beyond what you expect, eliminating the need for multiple EDS detectors
- **Delivers unparalleled sensitivity for compositional mapping** – Allows you to detect the lowest element concentrations with a signal-to-noise ratio (SNR) up to 25x better than conventional EDS detectors
- **Captures elemental and phase maps with unsurpassed spatial resolution** – With a windowless sensor that is over 80% larger, rapidly analyze samples at the lowest accelerating voltages
- **Determines composition accurately over the broadest range of SEM conditions** – Harnesses the power of an electron trap that operates at all accelerating voltages
- **Practical for multi-user environments** – Exclusive design maximizes uptime, ensuring you can focus on what's important: your research

The Octane Elite Ultra uses an EDS sensor that is over three times larger than conventional large-area thin-window sensors. With its windowless design and top-of-the-line processing electronics, the Octane Elite Ultra boosts sensitivity up to 25 times. This allows for elemental maps to be collected in a fraction of the time taken previously, real-time collection of phase maps, or maps acquired with up to 25 times larger field of view at the same SNR.

The Octane Elite Ultra uses an EDS sensor that is >80% larger than any other windowless detector, ensuring exceptional results in the most demanding applications. This empowers users to operate the SEM at the lowest accelerating voltage or beam current, enabling analysis of nanoparticles, beam-sensitive samples such as hybrid organic-inorganic perovskites or tissue sections, low boron steels, and ultra-thin dielectric layers in semiconductor devices, delivering results at a spatial resolution approaching that of secondary or backscattered electron imaging for EDS analysis.

You can now rely upon a windowless EDS detector as the solitary EDS detector on your SEM. The Octane Elite Ultra eliminates the limitations in quantitative analysis previously associated with windowless detectors, accelerating element identification and accurate quantitative analysis. Using an innovative electron trap, the system prevents pollution of the EDS spectrum from backscattered electrons with energies up to 30 keV, delivering the most accurate results across the broadest operating range. Utilizing the well-established EDAX APEX™ EDS Advanced software (version 3.0 or greater), the Octane Elite Ultra provides reliable analytical results, making it the only EDS detector you'll need.

With its proprietary sensor design, effective system monitoring, and mechanical shutter, the Octane Elite Ultra ensures the safety of the detector through active monitoring of the detector microscope's state. For instance, it transitions effortlessly to a safe state when necessary, e.g., when vacuum conditions are unsuitable for operation. Even in the event of catastrophic failure of the SEM, the robust sensor shows little-to-no degradation in performance even after exposure to atmosphere for 48 hours when cooled.

Providing precise quantitative analysis, fulfilling your most challenging analysis requirements, and ensuring long-term resilience, the Octane Elite Ultra is the definitive solution for all your analytical needs, even within a multi-user environment.

Specifications

Sensor	Silicon drift detector
Chip size	160 mm^2
Window material	Windowless
Cooling system	Peltier
Element detection range	Be – Am
Minimum detected x-ray energy	73 eV, Aluminum L
Operating range, SEM	<1 – 30 kV
System resolution, Mn[1]	128 eV guaranteed (125 eV typical)
Mapping throughput[2]	>500,000 cps

[1] At Mn Ka at 10k input counts per second

[2] Output count rate per second at 1,000,000 input counts per second

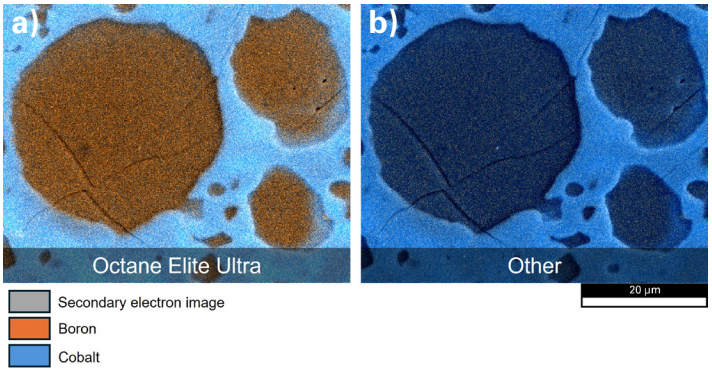

Figure 1. Composite images of boron and cobalt elemental maps overlayed on the secondary electron image of a boron steel sample. a) Captured with the Octane Elite Ultra and b) another EDS detector; the superior sensitivity of the Octane Elite Ultra to light elements enables boron distribution to be mapped and determined quantitatively.

Ordering

Model	Description
PV6600/UL[1]	EDAX Octane Elite Ultra EDS System
PV6600/UL.U[2]	EDAX Octane Elite Ultra EDS System

[1] For standalone operation. The system should be operated only in high vacuum conditions. Requires analyzer to be ordered as a separate line item

[2] For use in a dual EDS detector setup (EDAX Octane Elect or Octane Elite systems only) or as part of an EDAX Pegasus integrated EDS-EBSD system with EDAX Velocity or EDAX Clarity EBSD systems

Applications

- Boron and carbon steels
- Nanoparticle research and catalysis
- Nanoprecipitates in metallic alloys
- Semiconductor devices
- Cell biology
- Polymers and soft coatings
- Beam-sensitive samples

Other products to consider

- EDAX Pegasus (EDS-EBSD) System
- EDAX Neptune (EDS-WDS) System
- EDAX Trident (EDS-EBSD-WDS) System

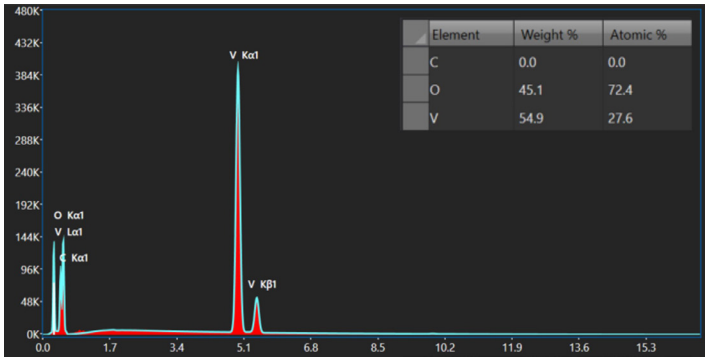

Figure 2. EDS Spectrum and (inset) quantitative evaluation of vanadium oxide (V_2O_5) using the Octane Elite Ultra detector; the composition measured was within ±1 at. %. The SEM was operated at 25 kV, and the beam current was set to provide 20,000 cps. The spectrum was analyzed by standardless analysis using eZAF and carbon coat correction and a calculated Bremsstrahlung background using APEX EDS Advanced software version 3.0.

DS-OCTANE-ELITE-ULTRA-FL1-NJ-AUG24