TSCAN VEGA

Analytical SEM for routine materials characterization, quality control and research applications at the micron scale.
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Analytical SEM for routine materials characterization, quality control and research applications at the micron scale.

✓ Analytical platform which efficiently combines SEM imaging with elemental composition analysis in single GUI using Fully integrated Essence™ EDS
✓ Optimum imaging and analytical conditions immediately available thanks to In-flight Beam Tracing™.
✓ Effortless and precise SEM navigation on the sample at very low magnifications thanks to the unique Wide Field Optics™ design
✓ Intuitive and modular Essence™ software
✓ Ultimate safety of the chamber mounted detectors when moving with the detectors - Essence™ 3D Collision model.
✓ SingleVac™ as a standard feature for observation of charging and beam-sensitive samples.
✓ Ecological and economic in use thanks to vacuum buffer which significantly reduce of vacuum rotary pump run-time
Essence™ EDS Spectrum from region and point
Unique Optics Design – Intermediate Lens™

Wide Field Mode™

RESOLUTION and DEPTH Mode

Fast setup of imaging conditions

10 mm

20 µm

5 keV

2 µm
Essence™ EDS combined with Wide Field mode
TESCAN Essence™ Software

- Multiuser modular GUI
- Application specific layout
- Layout manager for image windows
- Workflow-oriented wizards
- 3D collision model
- Quick search box
- SEM undo commands
TESCAN Essence™ software
All these features makes your SEM imaging routine

✓ **Faster** using Wide Field Mode™ and In-Flight Beam Tracing™
✓ **More Efficient** using integrated Essence™ EDS in live scanning window
✓ **More Intuitive** using Essence™ modular software
Evaluation of the Ceramic foam

- Ceramic foams have two principal applications
  - **As a ceramic filter** remove impurities from molten metal in the casting process at foundries.
  - **As a ceramic core** for castings from steel alloys and super alloys

- While produced mainly these factors are evaluated
  - Porosity
  - Cracks and adhesion of coatings
  - Overall morphology

Locations where porosity may be evaluated
Locations where coating thickness and adherence can be analyzed
Locations where cracks in coating and coating adherence can be analyzed (all the surface)

Ceramic foam was sputter coated
Analysis of pore size
Imaged at 15 keV with SE (left, middle) and BSE (right) detector

Ceramic foam was sputter coated
Analysis of Ti layer adherence and cracks
Imaged at 10 keV with SE detector

Ceramic foam was sputter coated
Ti Layer adherence and its thickness
Imaged at 15 keV with SE(left, middle) and BSE (right) detector
SingleVac mode

“single click to charge free imaging”

Ceramic foam
Imaged at 20 keV
Essence EDS™
“Elemental results instantly available”
Market leading ease of use got even better

**Wide Field Mode**
“single click to locate right features of interest”

**SingleVac**
“single click to charge free imaging”

**Essence™ EDS**
“single click to elemental results”
VEGA

Intermediate Lens™

Provide access to the unique observation modes (WIDE FIELD, DEPTH and FIELD)

Used for fast setup of the beam - “Magnetic aperture “

Topographical contrast

Material contrast
### Essence™ EDS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition modes:</td>
<td>Spectrum from region, point &amp; ID, line scan and elemental mapping</td>
</tr>
<tr>
<td>EDS detector chip/window size</td>
<td>30 mm$^2$</td>
</tr>
<tr>
<td>Chip/window material</td>
<td>Si$_3$N$_4$ window</td>
</tr>
<tr>
<td>Resolution</td>
<td>129 eV resolution @ Mn K$\alpha$</td>
</tr>
<tr>
<td>Number of puls processing settings</td>
<td>3</td>
</tr>
<tr>
<td>Maximum input count rate:</td>
<td>up to 1 000 000 CPS</td>
</tr>
<tr>
<td>Maximum output count rate:</td>
<td>up to 300 000 CPS</td>
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<tr>
<td>Quantification:</td>
<td>standardless, ZAF corrected</td>
</tr>
<tr>
<td>Report function</td>
<td>YES</td>
</tr>
</tbody>
</table>
1. Essence EDS button

2. Analysis type

4. start/stop

Data visualization

Data storage in data tree
All data can be reported or batch exported in *.PNG and *.CSV formate

3. Select ROI in live window