Product Bulletin - EBSD

Velocity™ EBSD Camera Series

- Fastest acquisition for efficient EBSD data collection
- CMOS imaging sensor for high sensitivity and low noise performance
- Accurate and precise data, even at high speeds, powered by EDAX triplet indexing and Confidence Index technology
- Optimized EDS-EBSD collection for highest EDS throughput at fastest EBSD speeds for complete analysis of multi-phase materials
- Compatible with patented NPAR™ for improved data quality with challenging samples

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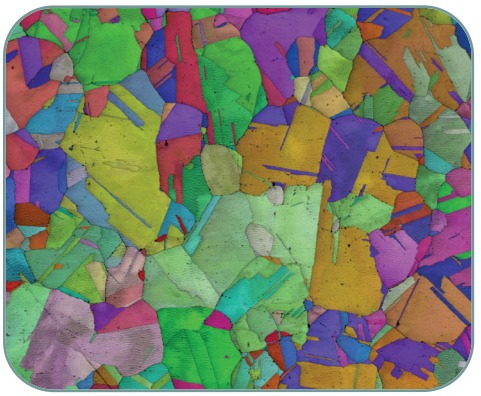
The Velocity™ EBSD Camera Series offers high-speed EBSD mapping with the best indexing performance on real world materials. Powered by a CMOS sensor, the Velocity™ combines fast acquisition with high sensitivity and low noise performance for optimal collection and data quality.

The Velocity™ Camera Series offers two different models:
Velocity™ Plus - up to 3,000 indexed points per second
Velocity™ Super - up to 4,500 indexed points per second

For both models, these speeds can be achieved while providing indexing success rates up to 99% or better. At these speeds, the Velocity™ cameras utilize 120 x 120 pixel images for improved band detection. This image resolution, combined with EDAX's proven triplet indexing routine, provides orientation precision values of less than 0.1^0 without needing any specialized processing routines for accurate characterization of deformed microstructures.

The performance of the Velocity™ camera extends to a wide range of materials, including lower symmetry, multi-phase and deformed structures. The Velocity™ Series enables efficient data collection on these real-world samples with the quality results needed for optimal materials analysis.



EBSD orientation map from Inconel 600 collected at 3,000 indexed points per second at 11 nA beam current with >99% indexing success.

The Velocity™ EBSD cameras can be integrated with compatible EDAX EDS detectors for efficient simultaneous EDS-EBSD collection, even at the highest collection speeds. When combined with Chl-Scan™ analysis, this results in useful integrated data for accurate phase differentiation.

EBSD orientation map from additively manufactured Inconel 718 collected at 4,500. indexed points per second at 25 nA beam current.

Specifications

- Data collection rates:
  Velocity™ Plus up to 3,000 indexed points per second
  Velocity™ Super up to 4,500 indexed points per second
- Low noise CMOS sensor
- Orientation precision less than 0.1 without special correction routines
- 640 (H) x 480 (W) image size
- 120 x 120 image resolution at maximum indexing speeds
- 12-bit imaging
- Phosphor screen optimized for high speed/high sensitivity collection
- Custom lens for optimal performance
- Operation down to 5 kV acceleration voltage
- Compatible with NPAR™ and OIM Analysis™
- Compatible with HR-EBSD
- Motorized slide with metal bellows vacuum protection
- PRIAS™ and Forward Scatter Detector included

Features and Benefits

Data collection rates up to 3,000 or 4,500 indexed points per second

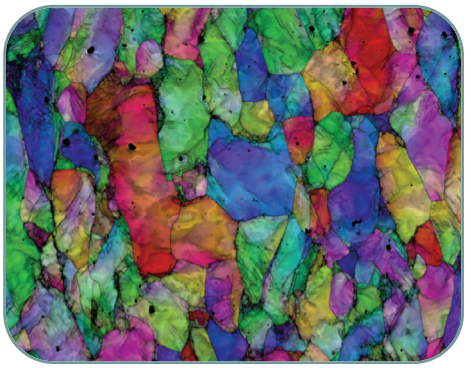
- EBSD maps can be collected in minutes for efficient SEM use, in-situ experiments, and 3D EBSD applications

High-speed, low-noise CMOS sensor

- Sensor provides high sensitivity and low noise, and 120 x 120 pixel images for EBSD indexing at highest speeds

Orientation precision less than 0.1°

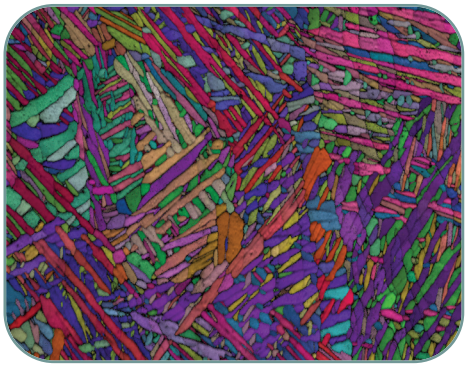
- Clear characterization of deformed microstructures with standard indexing routines



EBSD orientation map of deformed ferritic steel collected at ~ 2,500 indexed points per second.

Highest indexing success rates

- EDAX's proven triplet indexing and patented Confidence Index provide unparalleled indexing performance on challenging real-world samples



EBSD orientation map of additively manufactured titanium (HCP + BCC phases) collected at ~2,500 indexed points per second.

High-speed simultaneous EDS-EBSD collection

- The Velocity™ EBSD cameras have been optimized with compatible EDAX EDS detectors for efficient data collection at the highest speeds

Conclusion

The Velocity™ EBSD Camera Series provides the high-speed EBSD mapping capability combined with the accurate indexing needed to resolve crystallographic microstructures and help solve materials characterization challenges quickly and easily.

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