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IBSS GV10X application example

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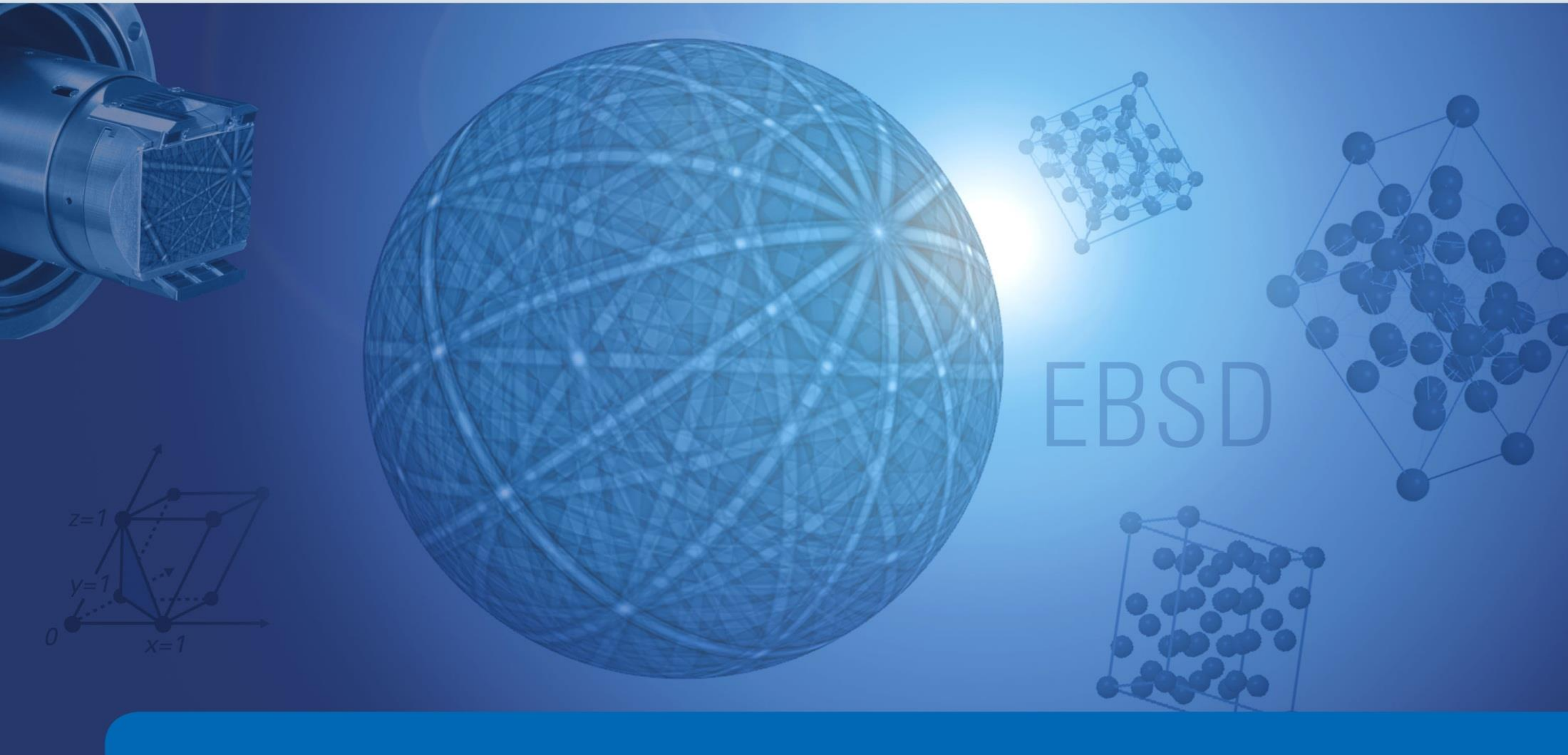
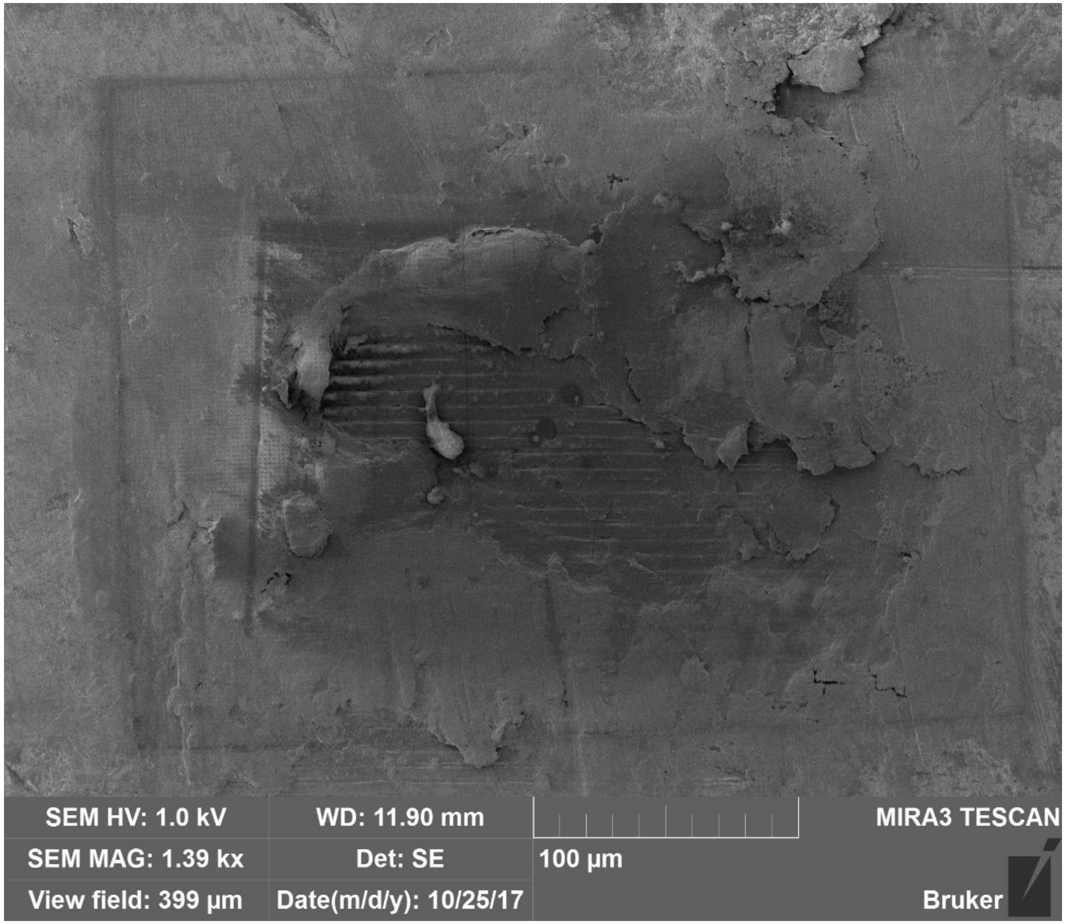


Test procedure

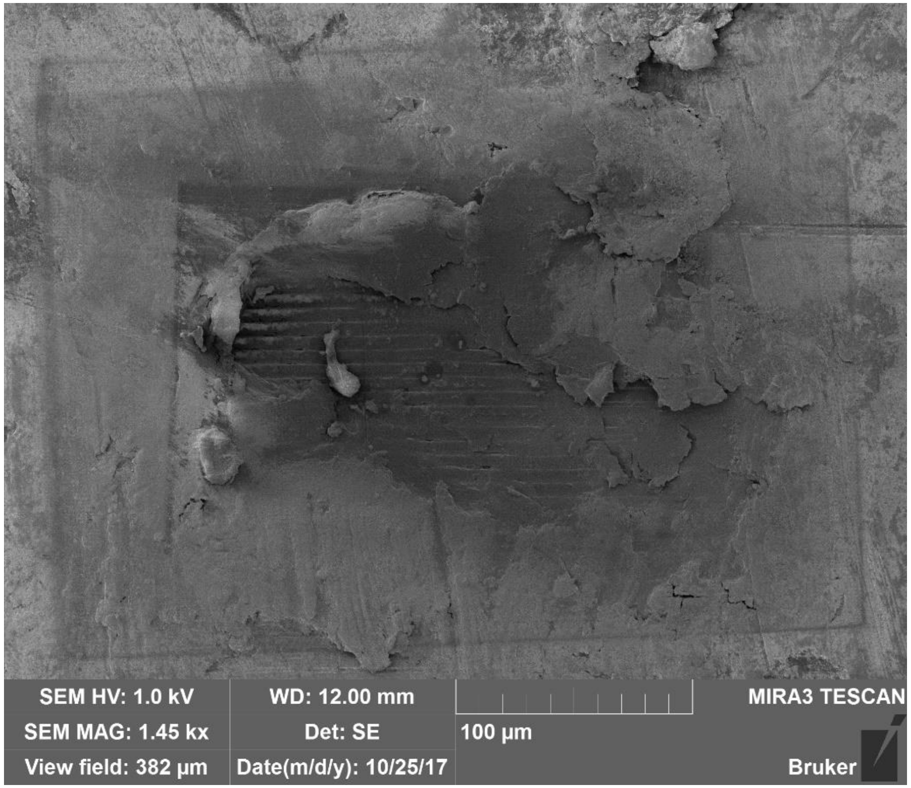
- One semiconductor sample was mounted to an Al pin stub using carbon tape
- Mounted in a Tescan Mira3 FESEM before cleaning or coating
- Sample region of interest was mapped using EDS on numerous occasions (20x?) for ~10-40 minutes each at 10-15 kV with an 8-10 nA beam current to produce contamination rectangles (has never been cleaned/remounted in ~3.5 years of use in demonstrations and for customer training sessions)
- The contamination rectangles were imaged at 1 nA and 188 pA probe current
- Sample working distance was lowered to 30 mm to improve the line of site to the GV10X cleaner
- Column valve was closed
- Cleaner was run for 8 minutes at 50 watts and 8x10-1 Pa with a time of 8 minutes – rectangles were still visible after subsequent imaging at low kV
- Sample was cleaned 1 additional time at 8 minutes using the same conditions
- Slight contamination was present after a total cleaning time of 16 minutes
- Sample sat in the SEM chamber overnight under vacuum
- Sample region of interest was mapped again the following day using EDS for 17 minutes at 10 kV and 8 nA beam current
- The contamination rectangles were imaged at 1 nA and 188 pA probe current

Before cleaning, post-EDS maps

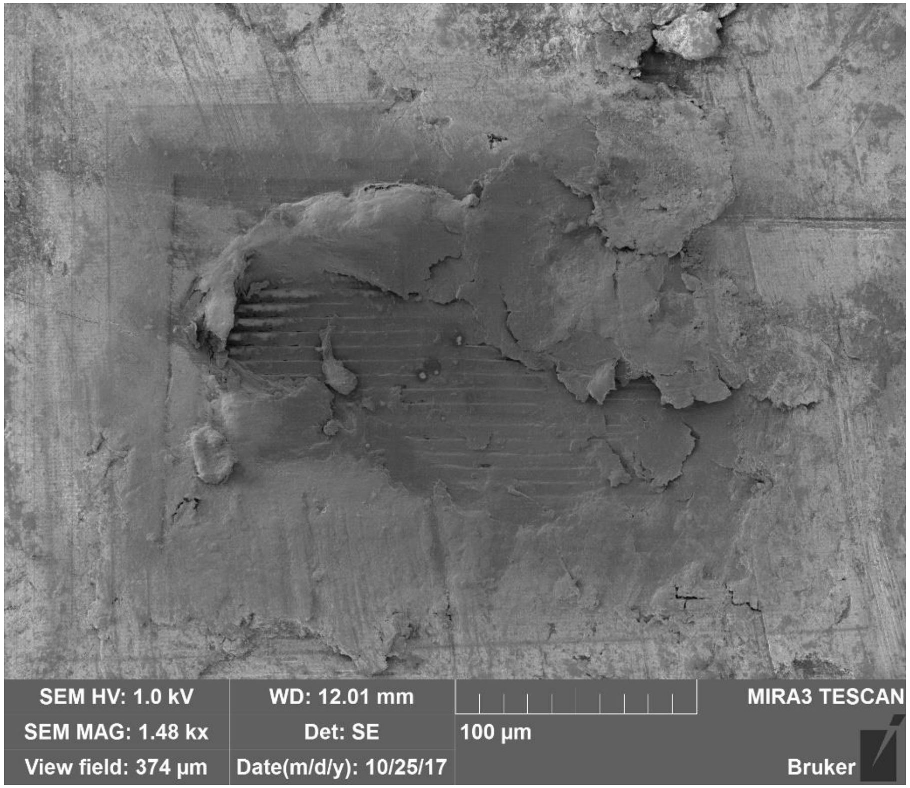


Imaging conditions: 1 kV
188 pA
4.7x10-1 Pa chamber pressure

After cleaning

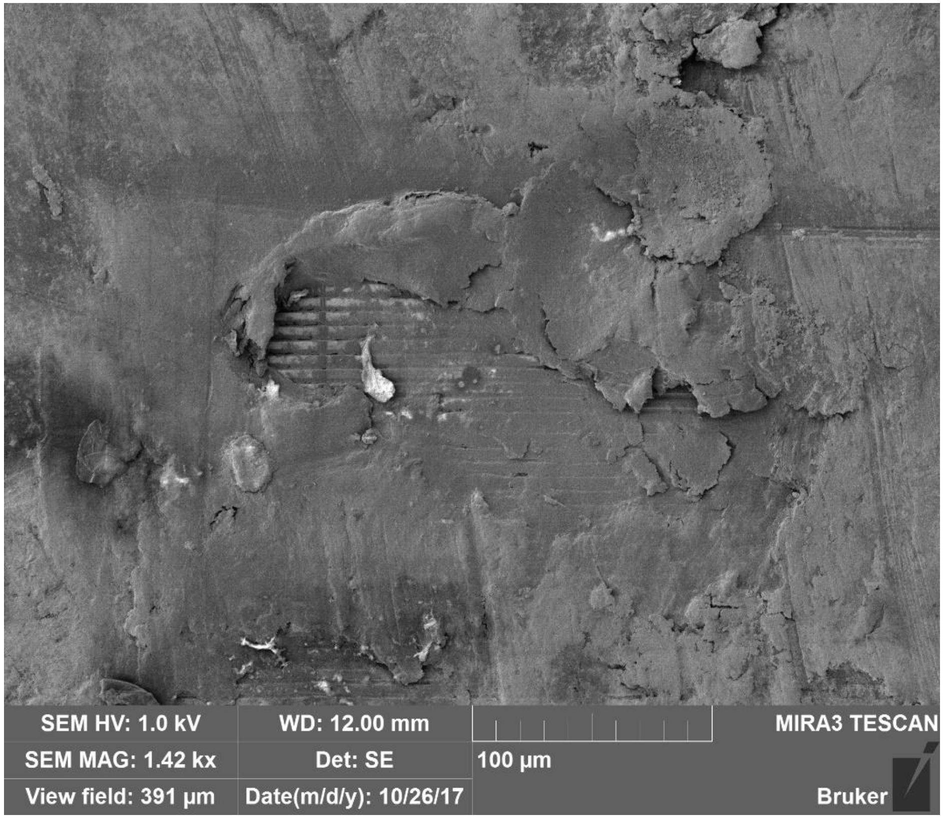


Imaging conditions: 1 kV
188 pA
4.7x10-6 Pa chamber pressure
Cleaning conditions: 50 watts
8 minutes
8x10-1 Pa pressure



Imaging conditions: 1 kV
188 pA
4.7x10-6 Pa chamber pressure
Cleaning conditions: 50 watts
16 minutes (total cleaning time)
8x10-1 Pa pressure

After cleaning – post final EDS map



Imaging conditions: 1 kV
188 pA
4.7x10-6 Pa chamber pressure
Cleaning conditions: 50 watts
16 minutes (total cleaning time)
8x10-1 Pa pressure

Summary

- Very minor additional contamination buildup was visible during low kV imaging after the final EDS map was collected
- The total cleaning time of 16 minutes was sufficient to remove the majority of contamination accumulated from sporadic EDS analysis over 3.5 years
- No modification of the chamber vacuum conditions was required

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