Cross section polishing of packaging laminates and their defects

Presented by:
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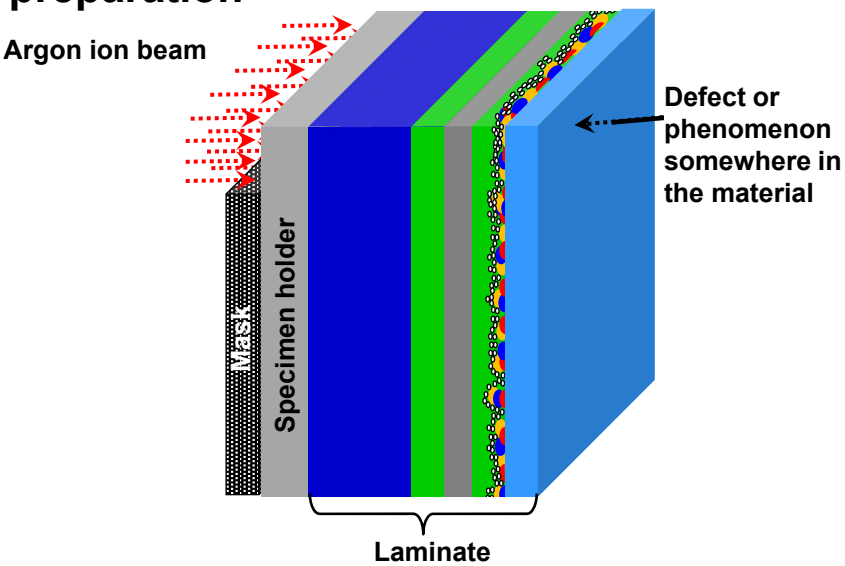
Hydro Aluminium
Rolled Products GmbH
R&D Bonn

Hydro

Structure

- **Cross sectioning principle**
- Examples
  - Lacquered aluminium foil
  - Adhesive laminated packages
  - Laminate with oriented and voided polypropylene
  - Aluminium/paper laminate
  - Extrusion lamination with aluminium foil
  - Extrusion coating on paper
- Resume

Principle of ion beam cross sectioning and sample preparation



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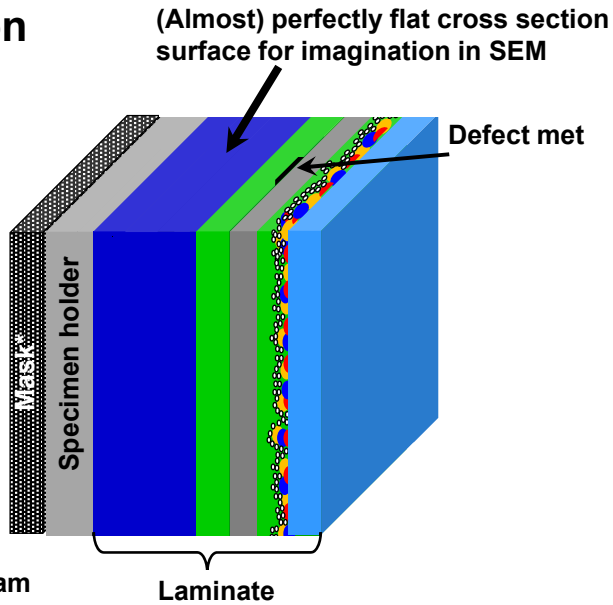

*Mask withstands the ion beam

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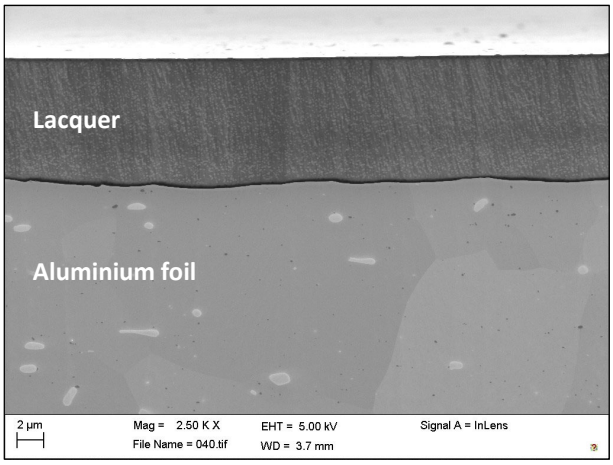
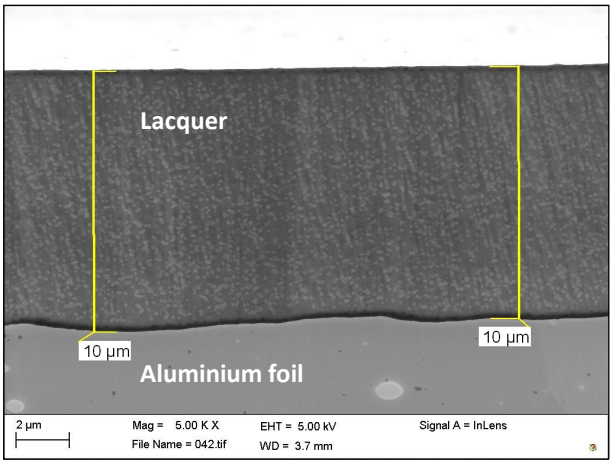
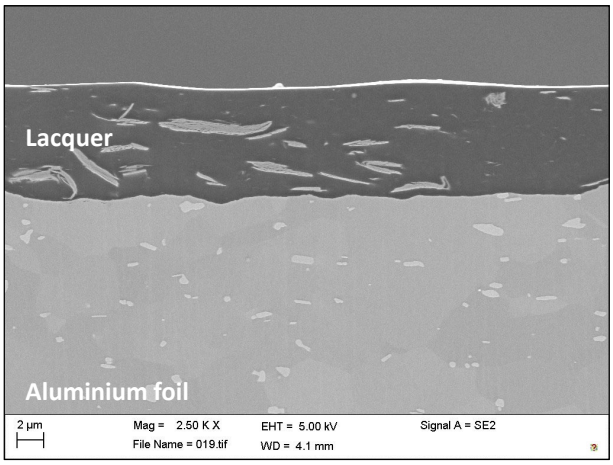
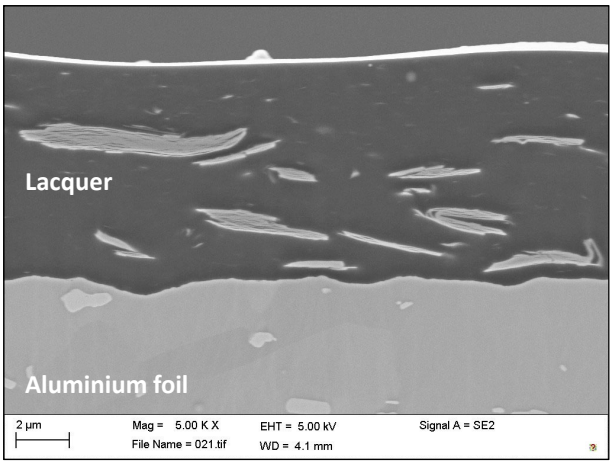
Examples – Lacquered aluminium foil





Examples – Coating on foil carrying filler platelets





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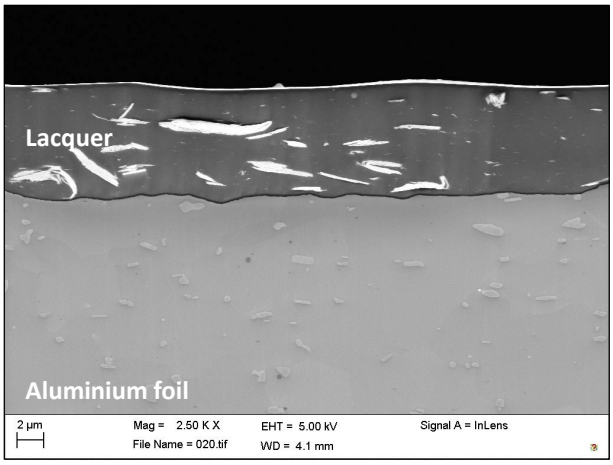
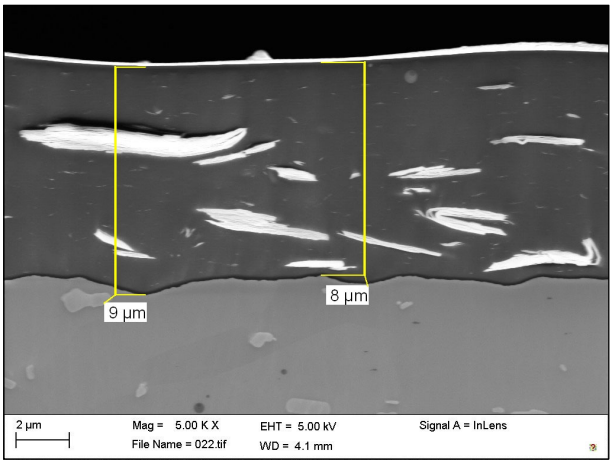
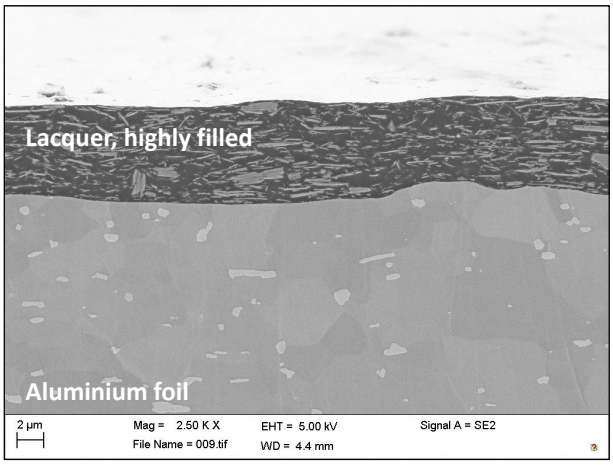
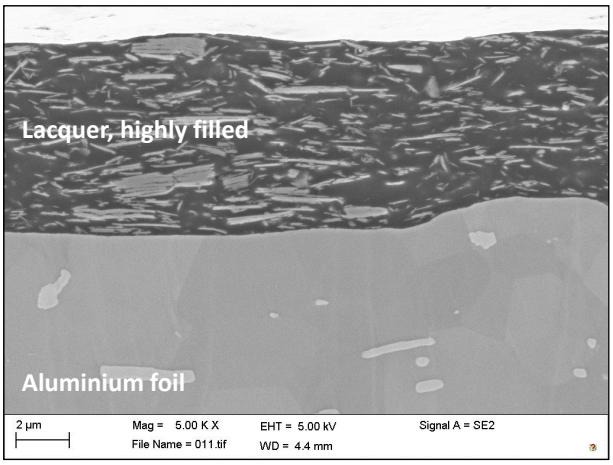




Examples – Lacquered aluminium foil





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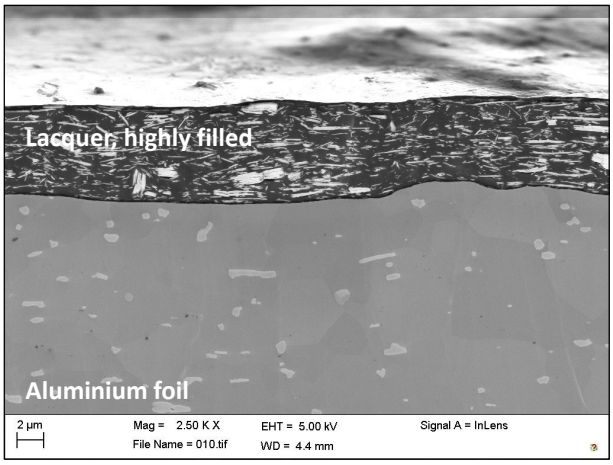

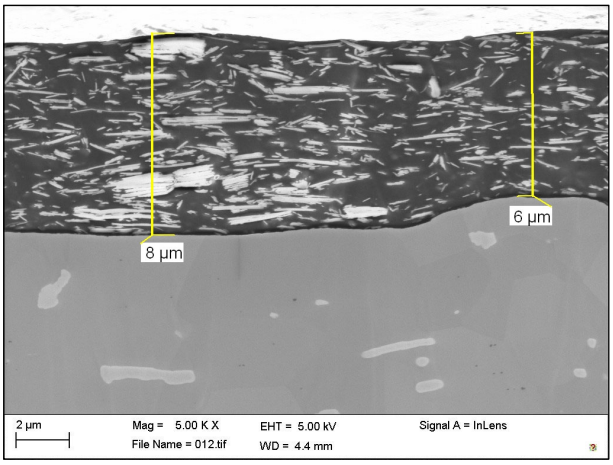

Structure

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  - Laminate with oriented and voided polypropylene
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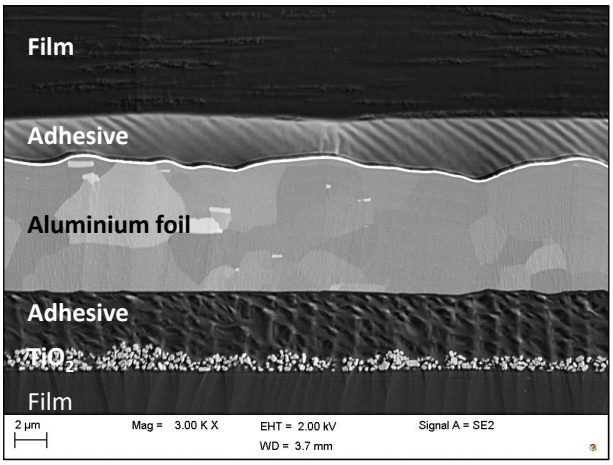
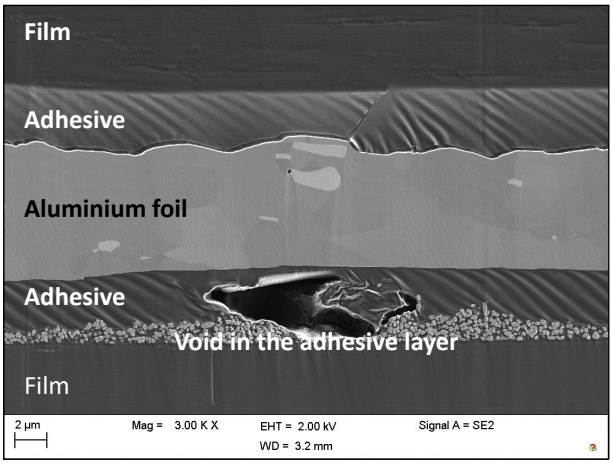
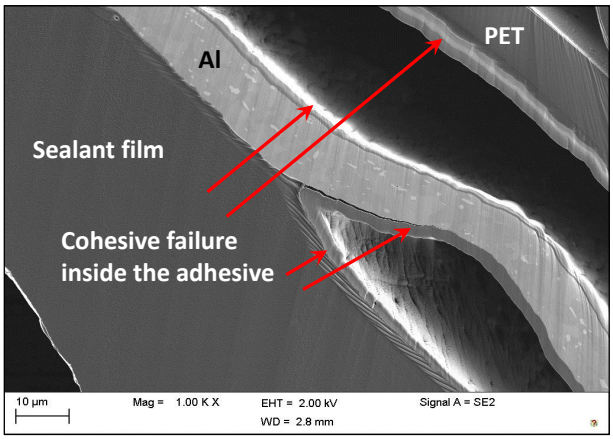
  - Extrusion coating on paper
- Resume

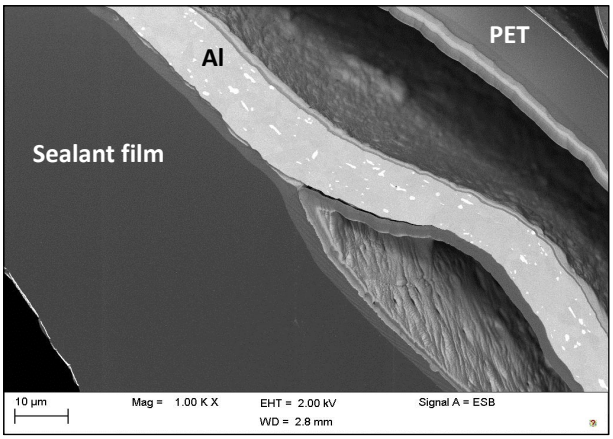
Example – Adhesive laminated aluminium foil



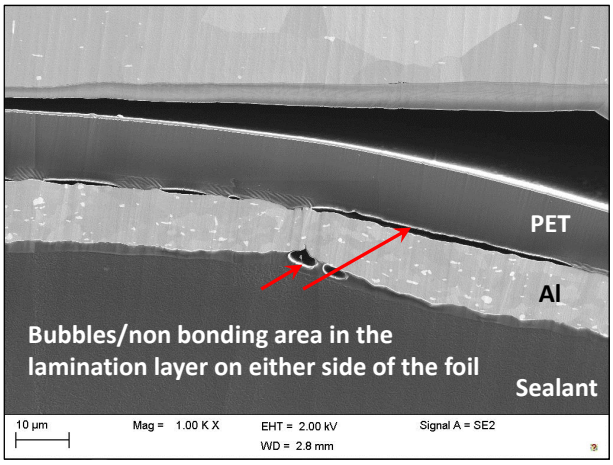


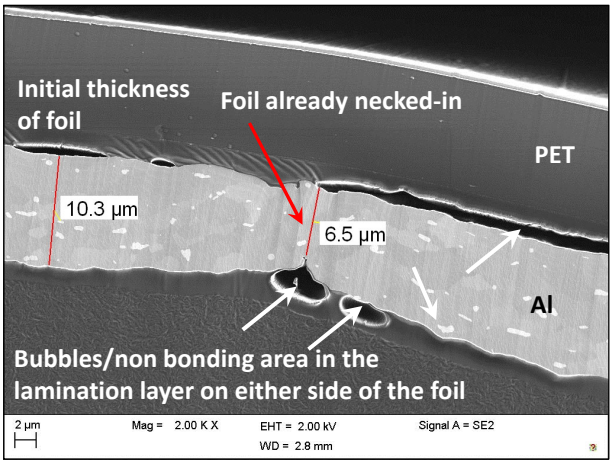
Example – Delaminations in a 3-ply laminate





Example – Delaminations in a 3-ply laminate and subsequent foil damage from mechanical stress





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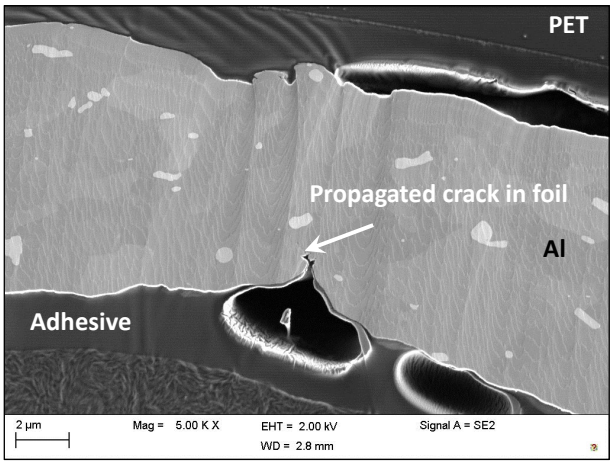

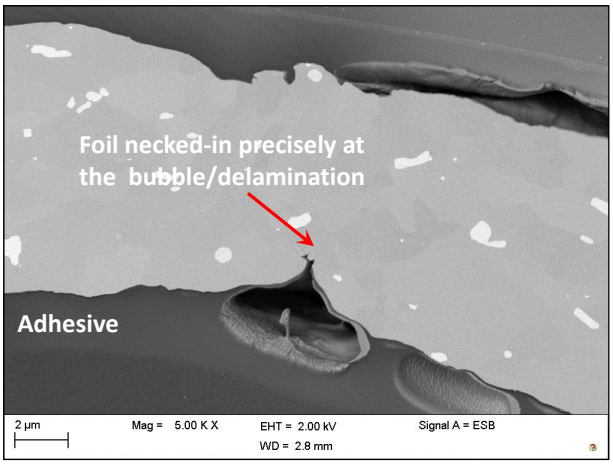

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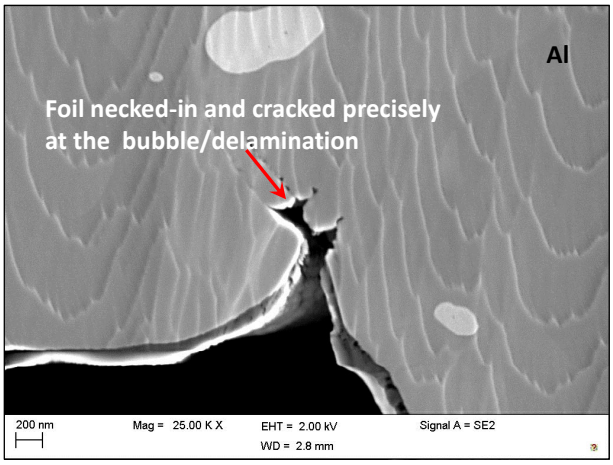
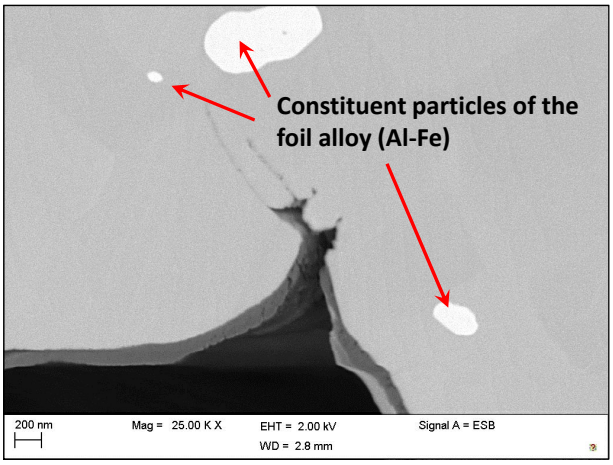
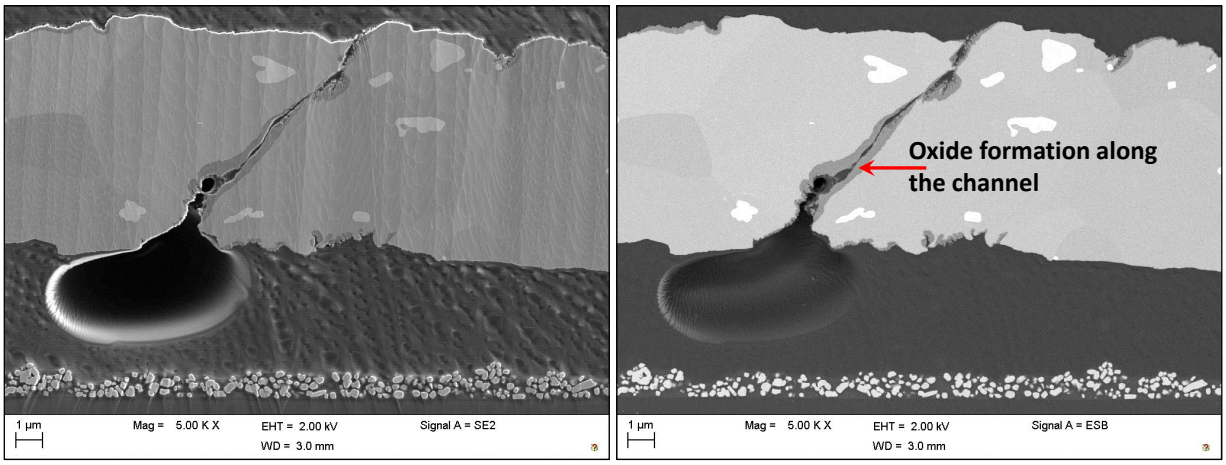




Example – Bubble in a retortable laminate and subsequent foil cracking from hydrothermal/mechanical stress



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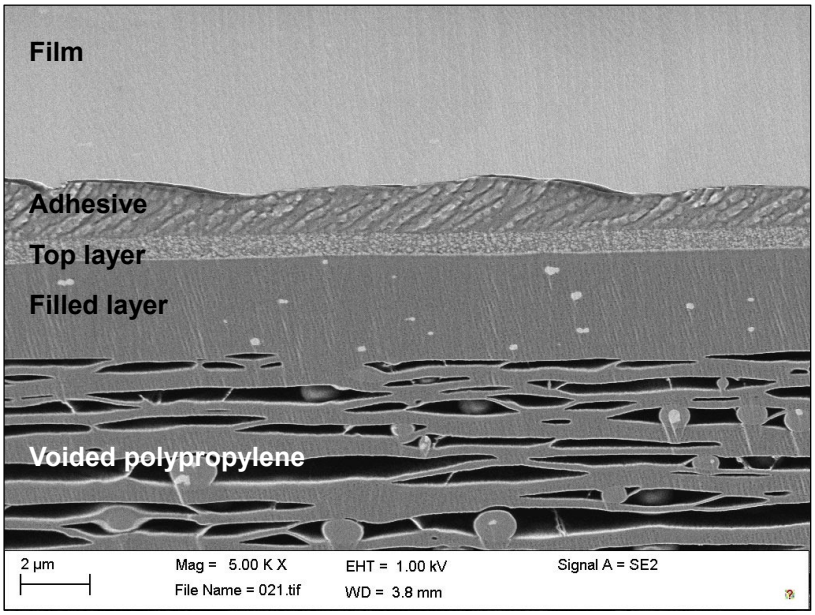
Example – Laminate with oriented opaque polypropylene



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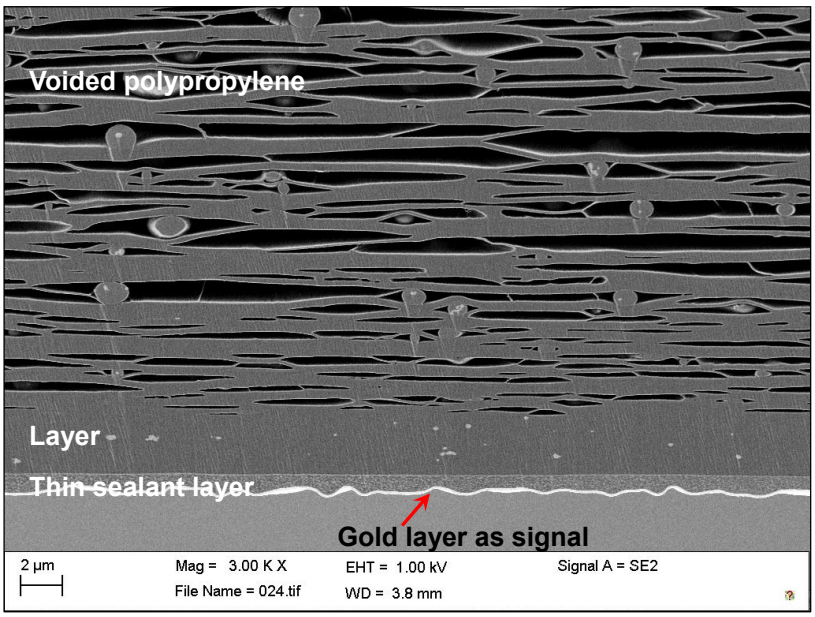

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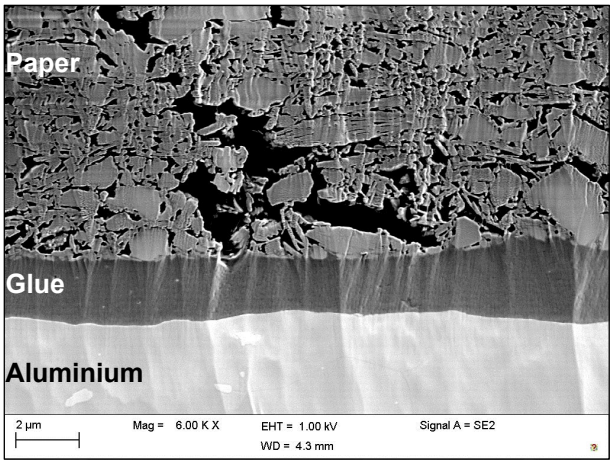
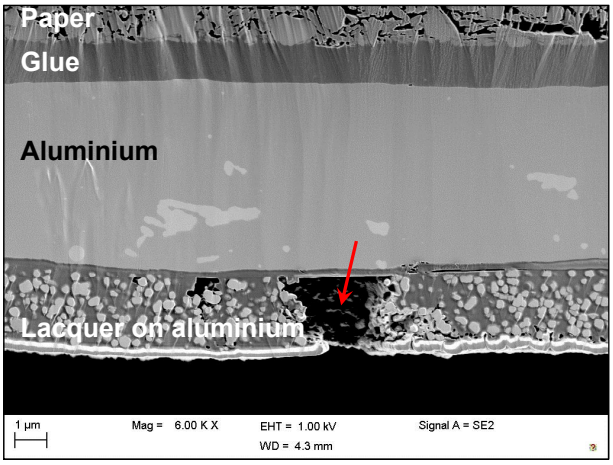
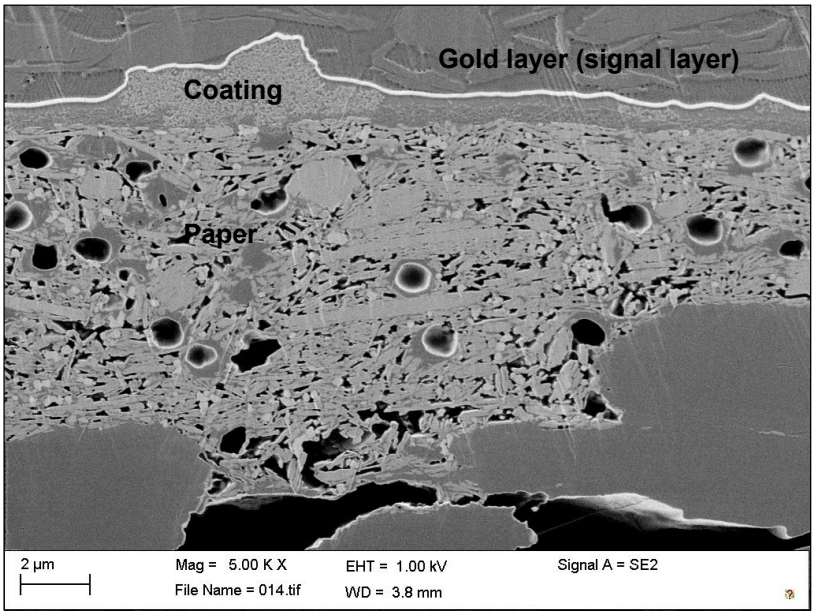
Example – Aluminium/paper laminate





Example – Coated paper laminate



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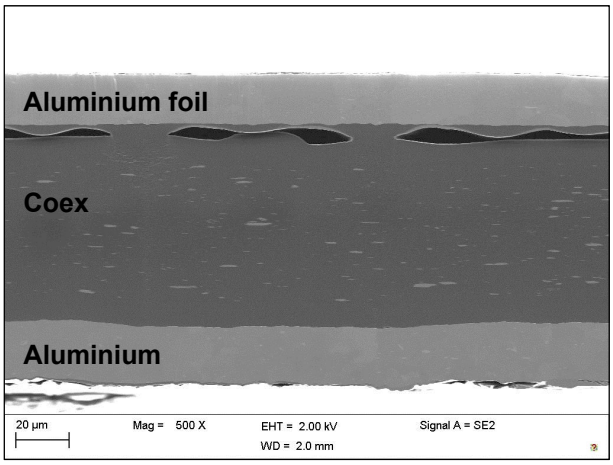
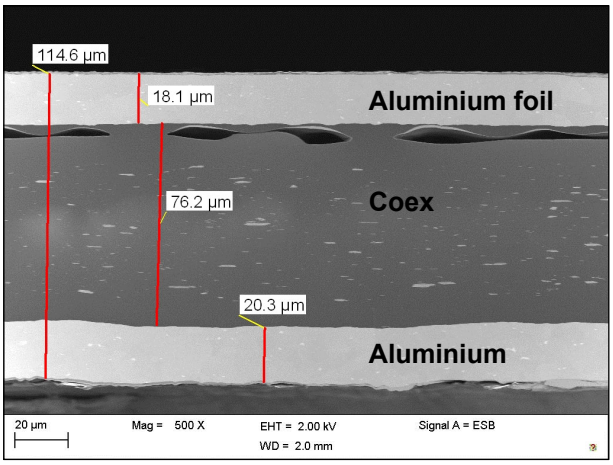
Example – Extrusion lamination with 3 coex layers





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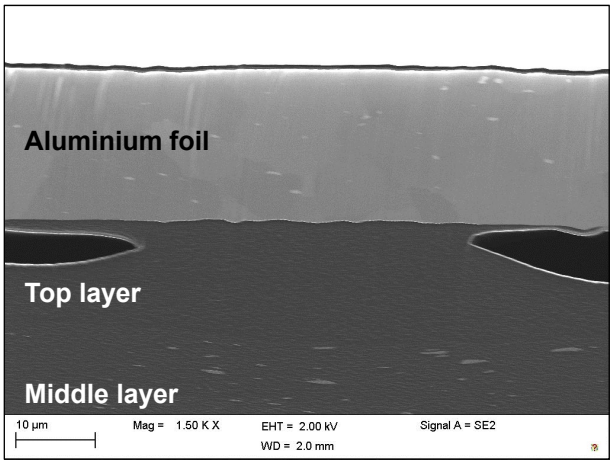

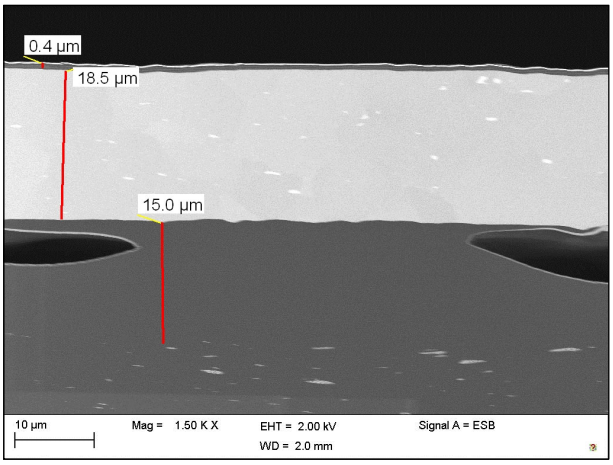

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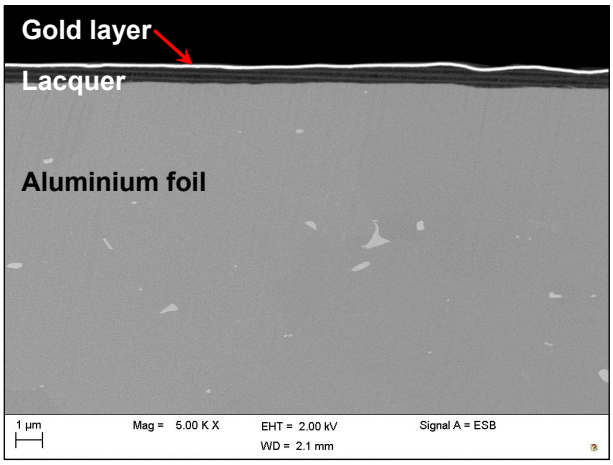

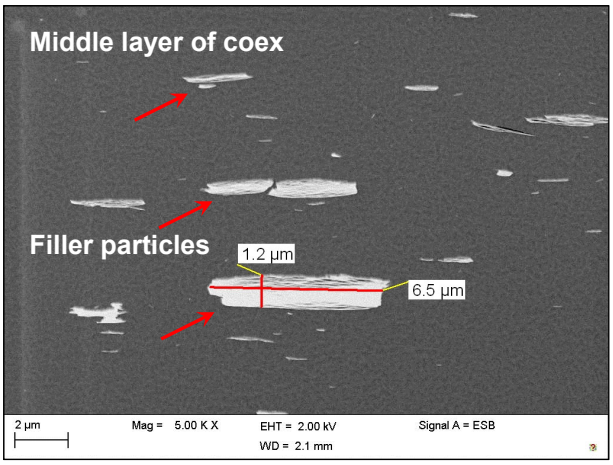

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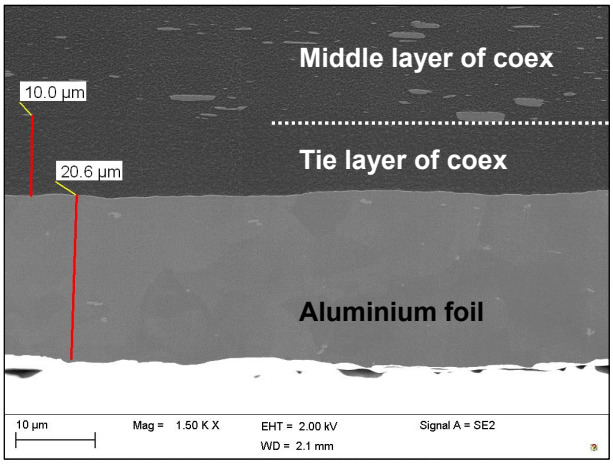

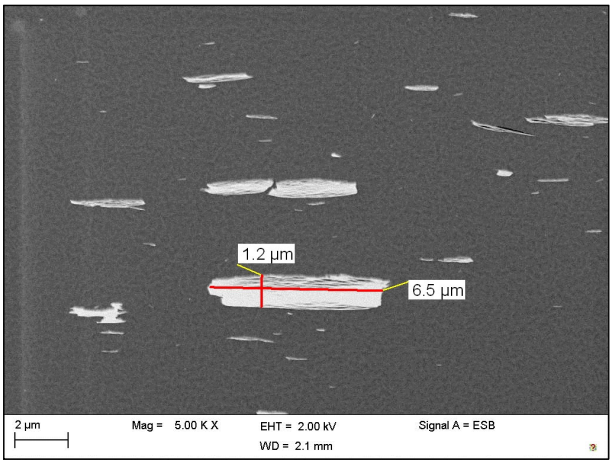

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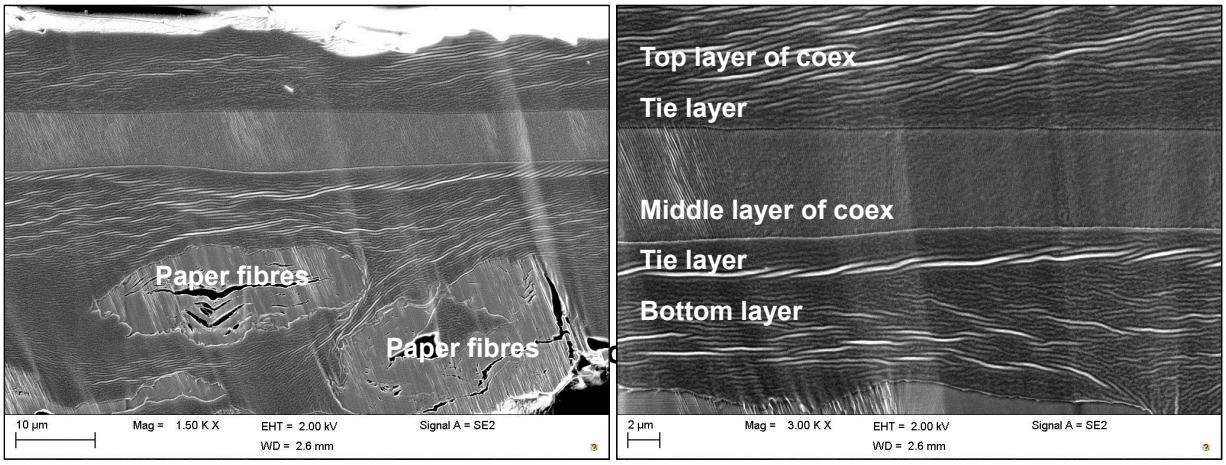
Example – Extrusion coex barrier coating on paper



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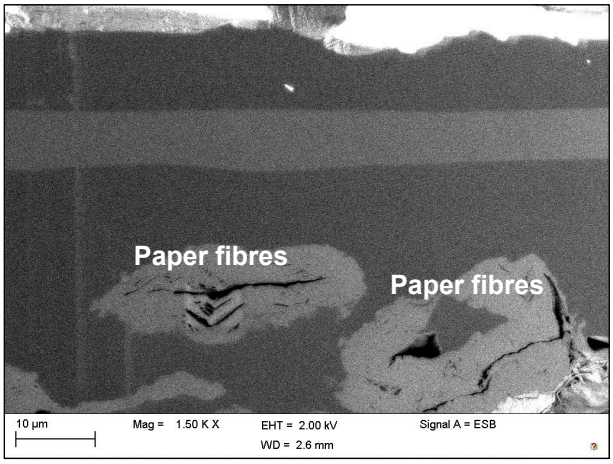

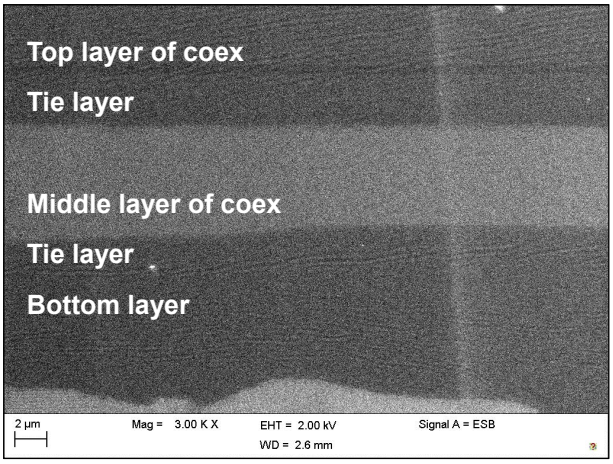

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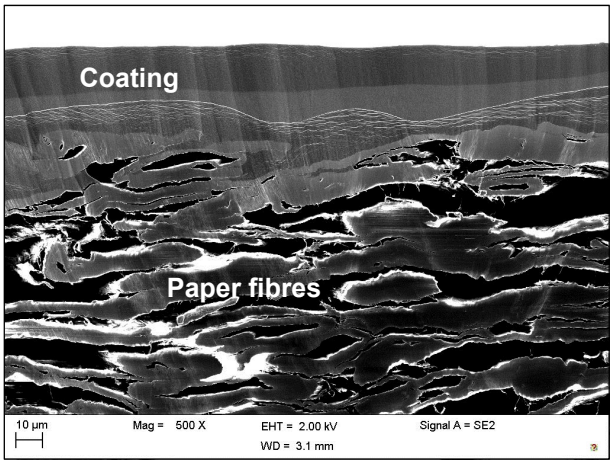

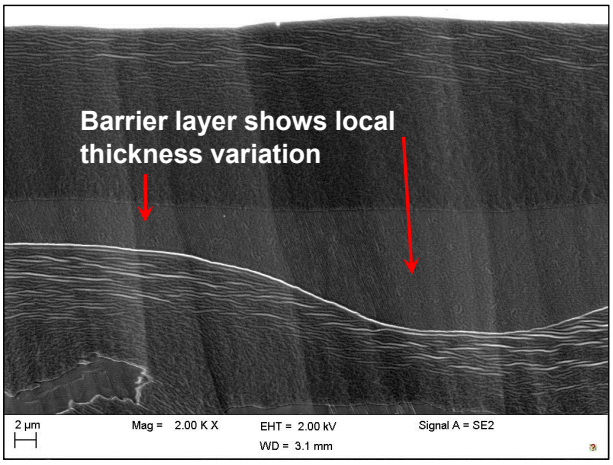

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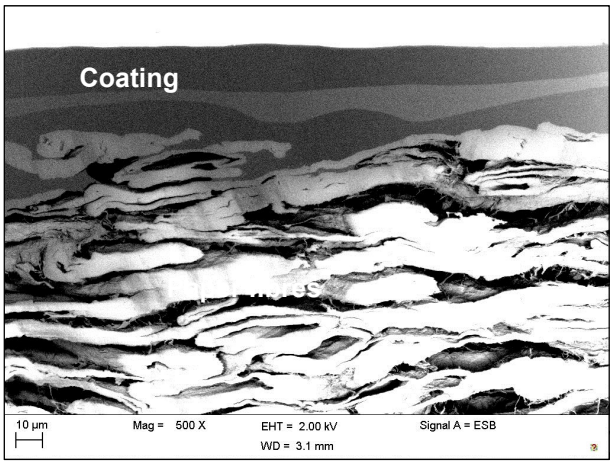

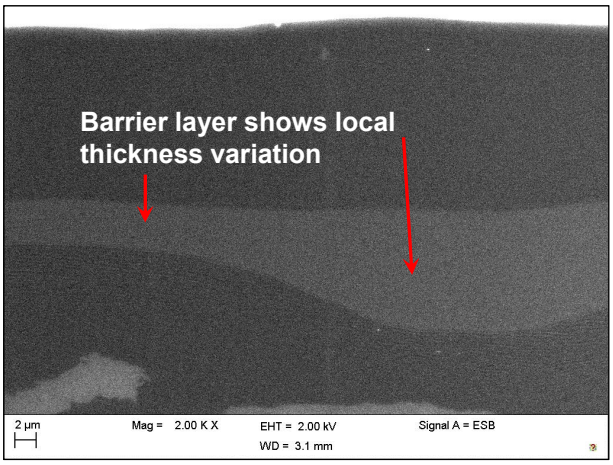

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Resume

- Cross section polishing is a versatile tool to prepare samples for subsequent investigation of defects in packaging laminates of every kind of composition, aluminium, polymer coatings, minerals and also paper
- Together with SEM the procedure delivers images of unrivalled quality and resolution and without the typical artefacts from mechanical impact by microtoming or grinding and polishing
- Thanks to our cross section team in Hydro R&D Bonn, Karen Westphal and Hans-Joachim Krupp for their engagement

Thank You for listening

It is almost impossible to see nothing, but not everything you see is an artefact

Presented by:

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- Foil Converting -
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PLACE

Hydro