Microscope light guide fiber cladding analysis with SEM/EDX

search for second cladding layer

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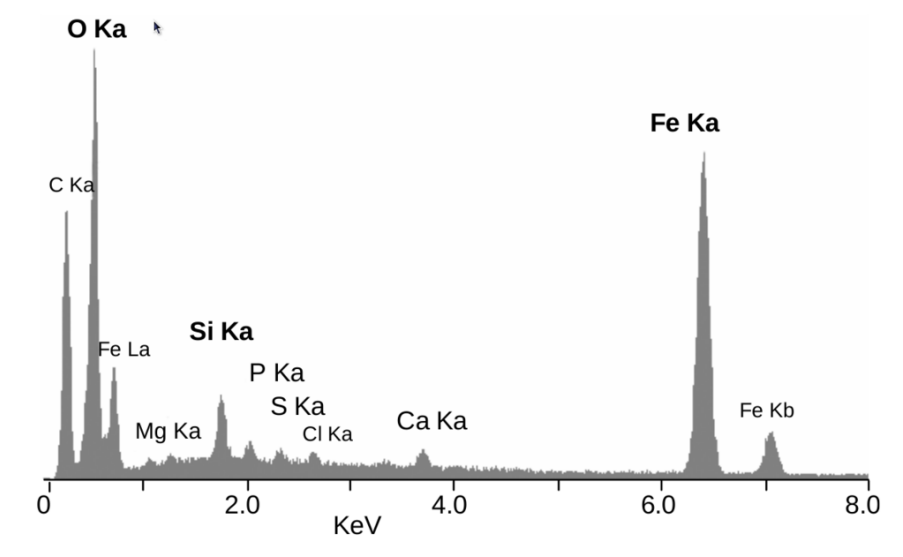
Overview

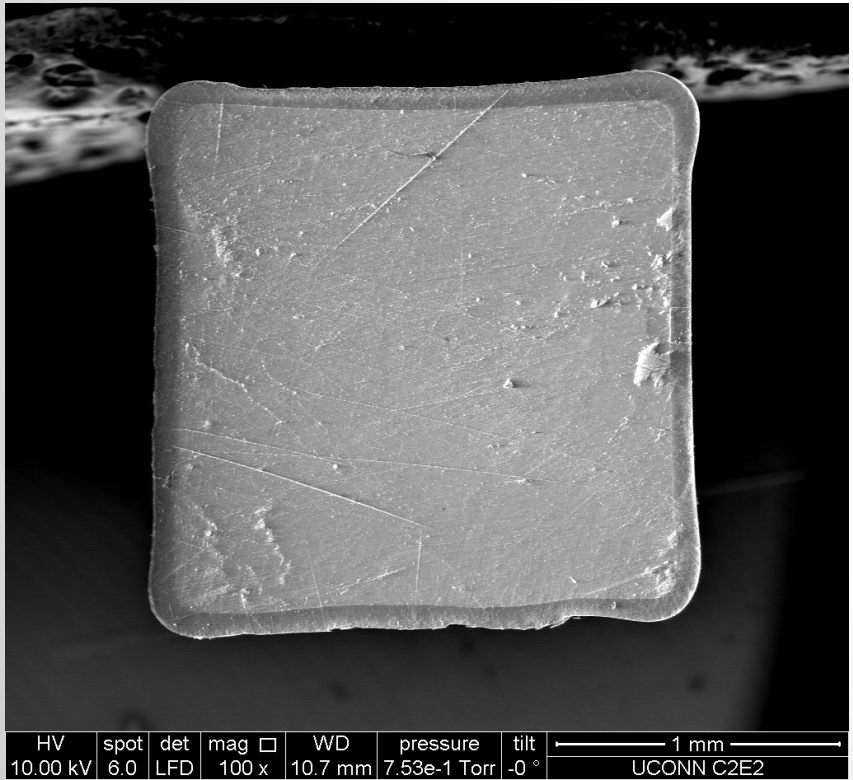
SEM - scanning electron microscope

EDX - energy-dispersive X-ray spectroscopy

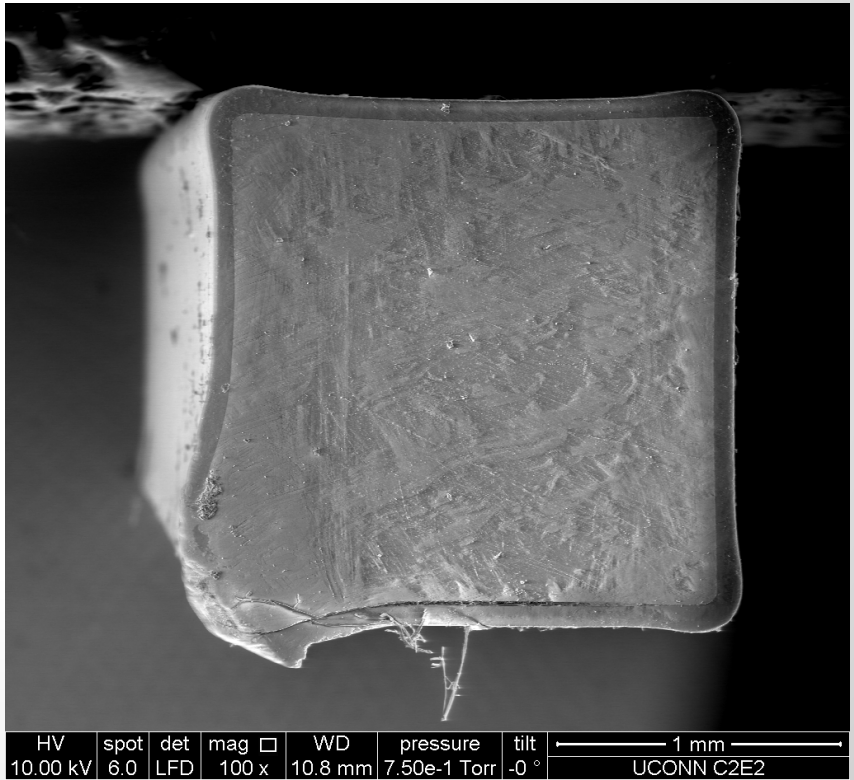


SEM images - light guide cross sections

old light guide sample



new light guide sample



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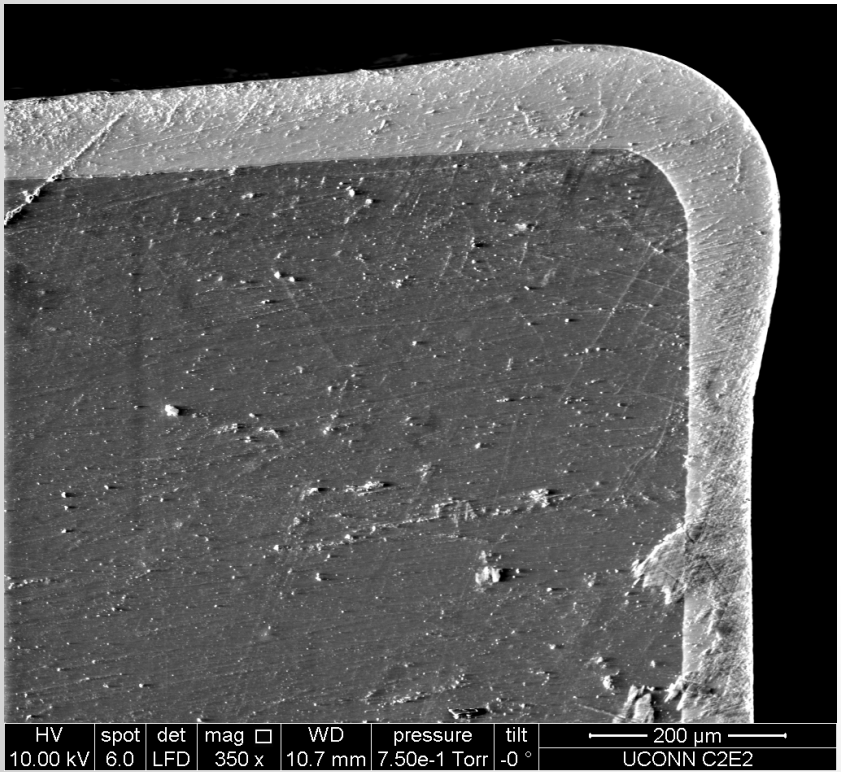
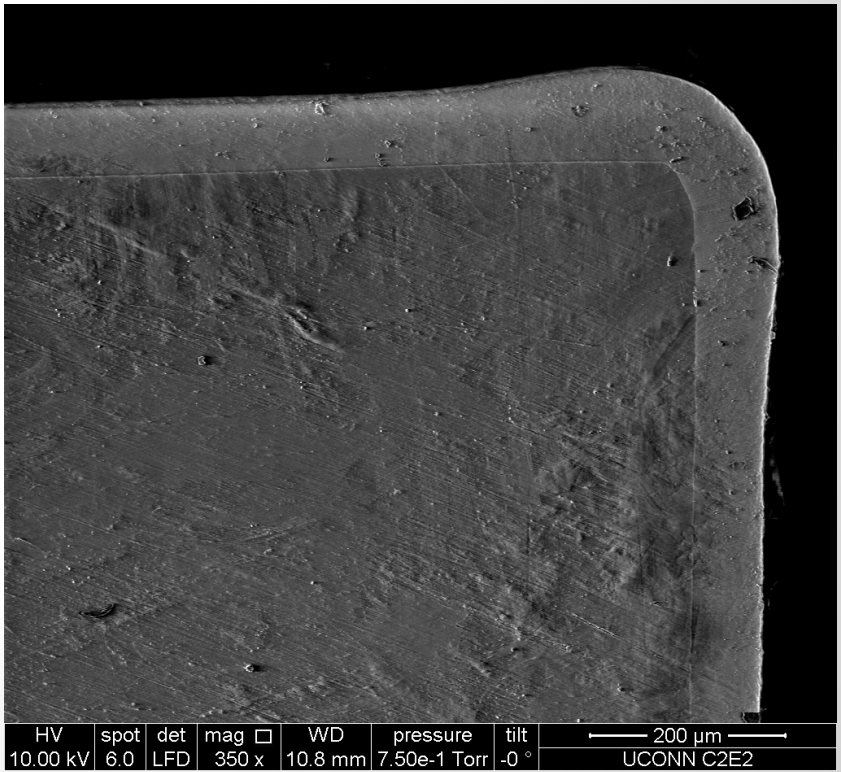


new light guide sample



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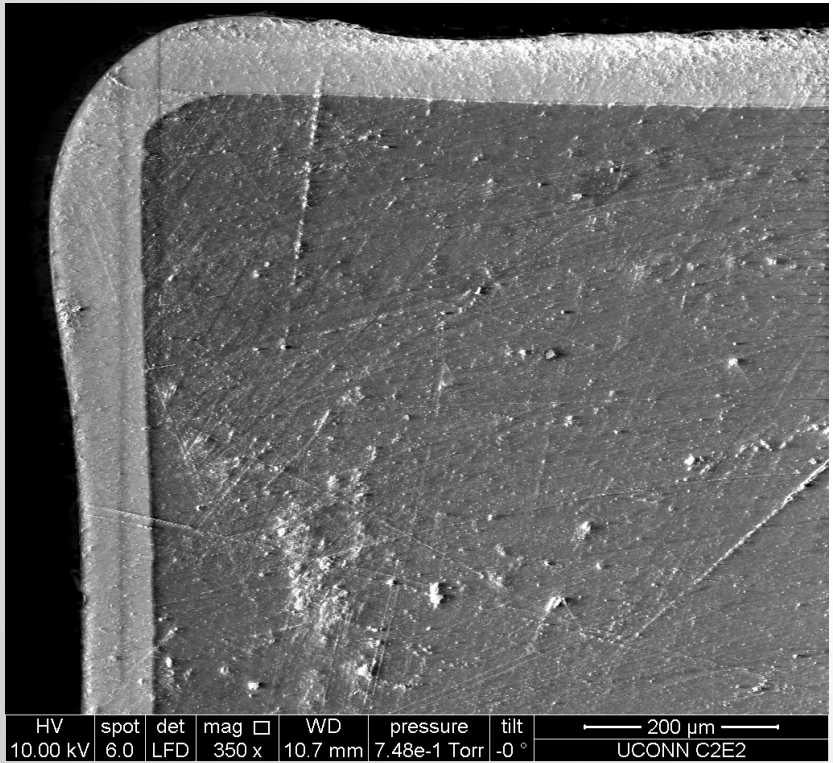
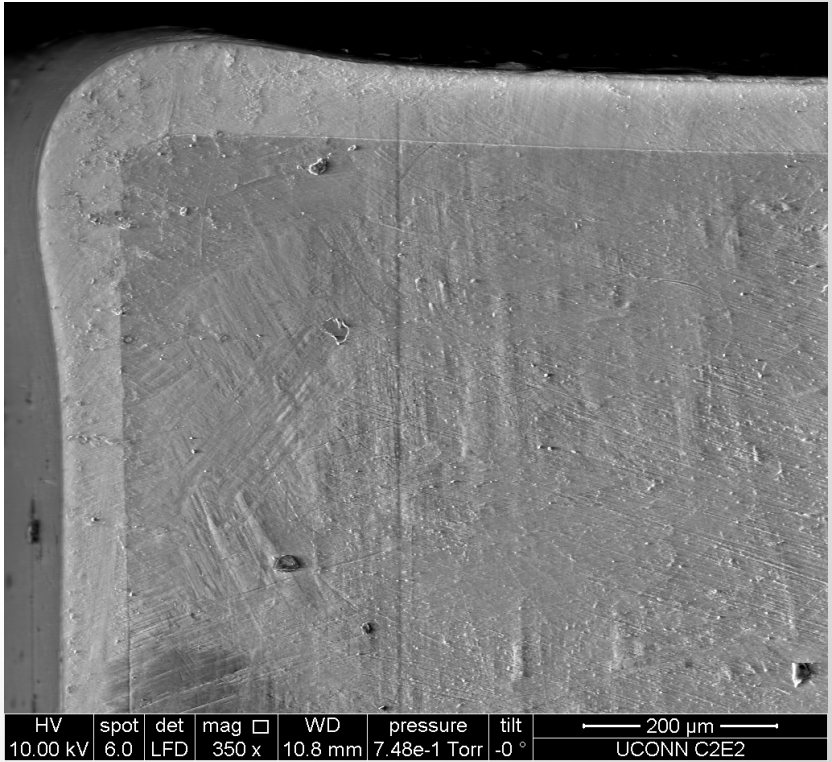
old light guide sample



new light guide sample



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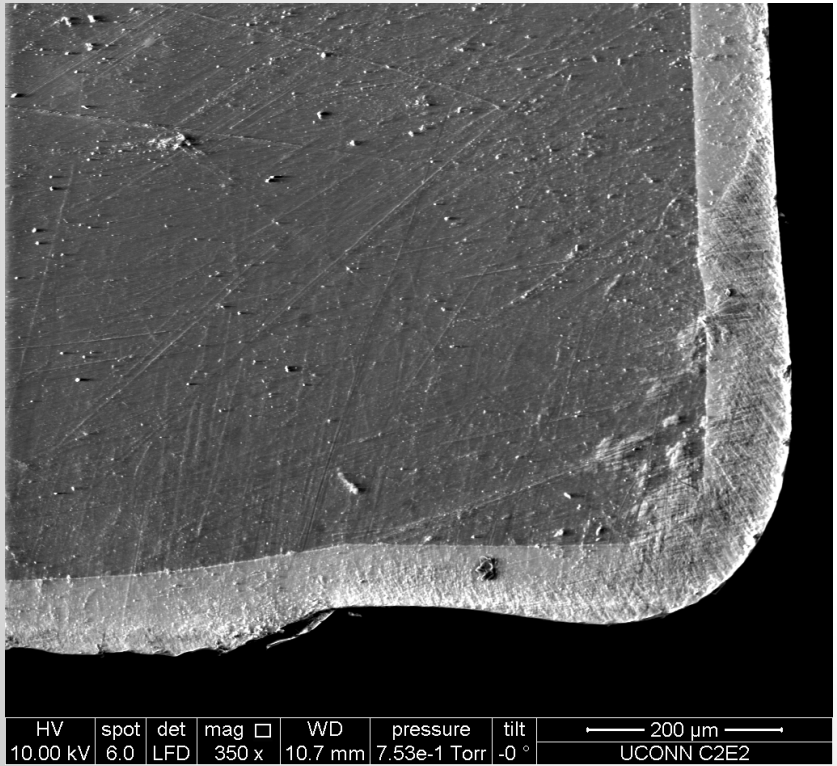
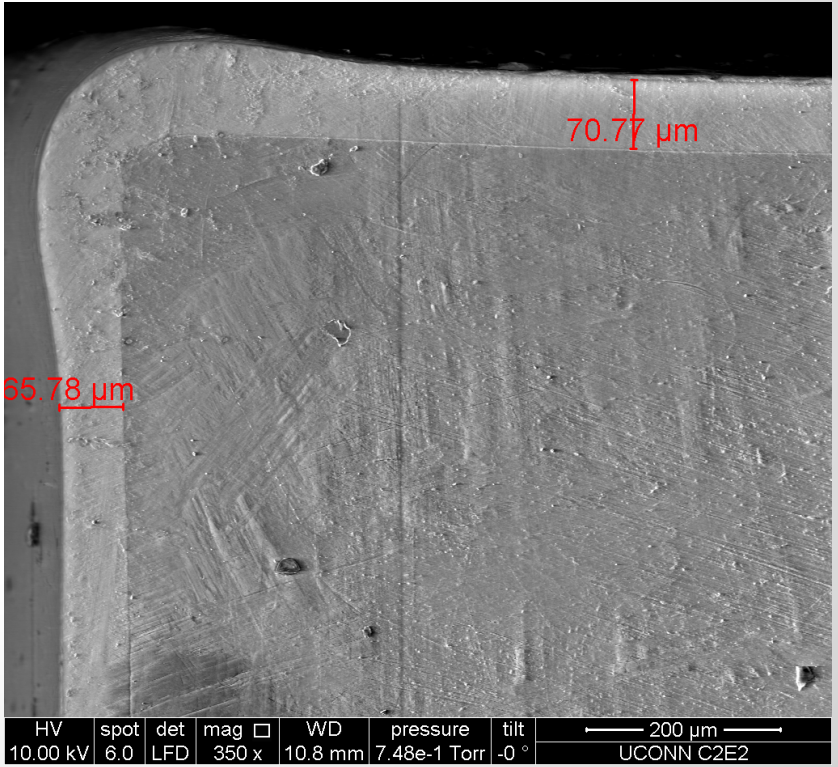
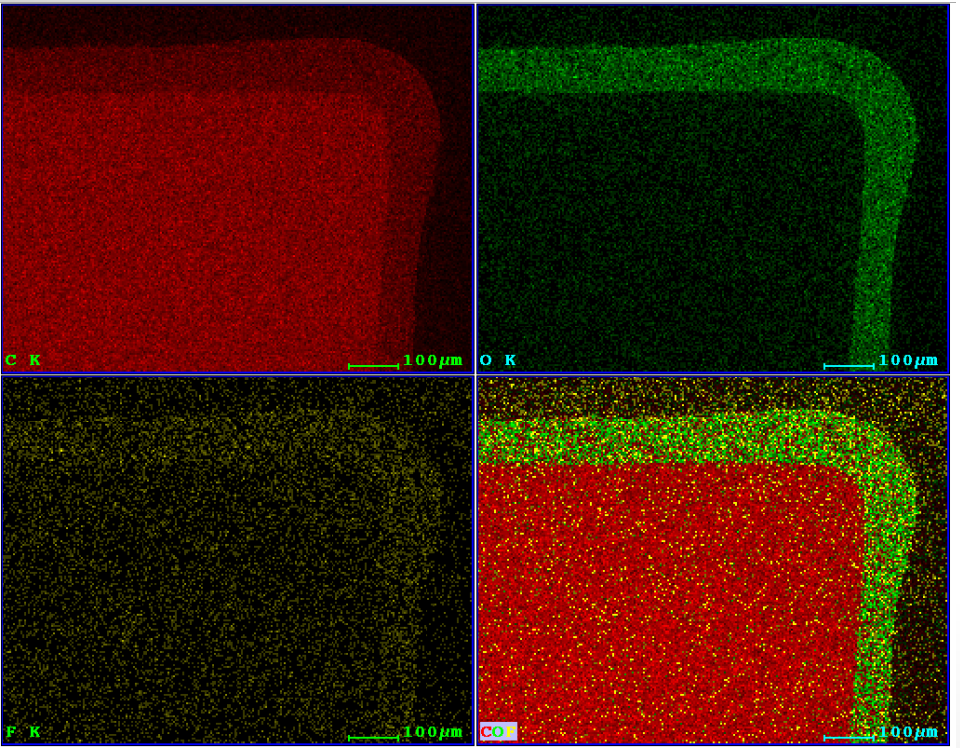


new light guide sample

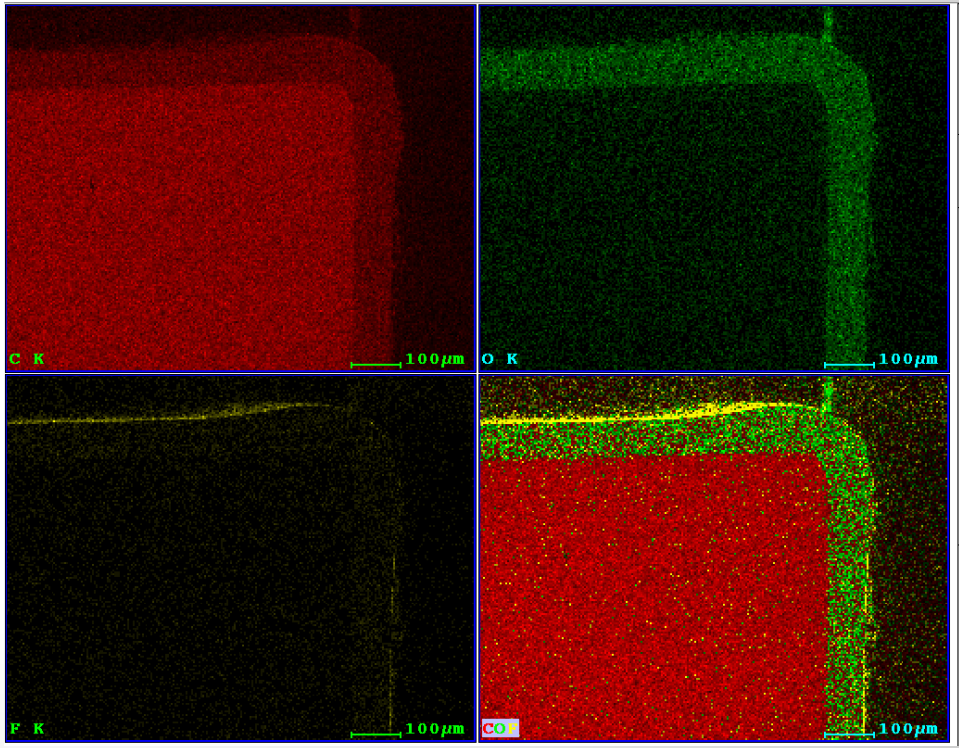


EDX images - light guide cross sections

EDX image: old light guide sample

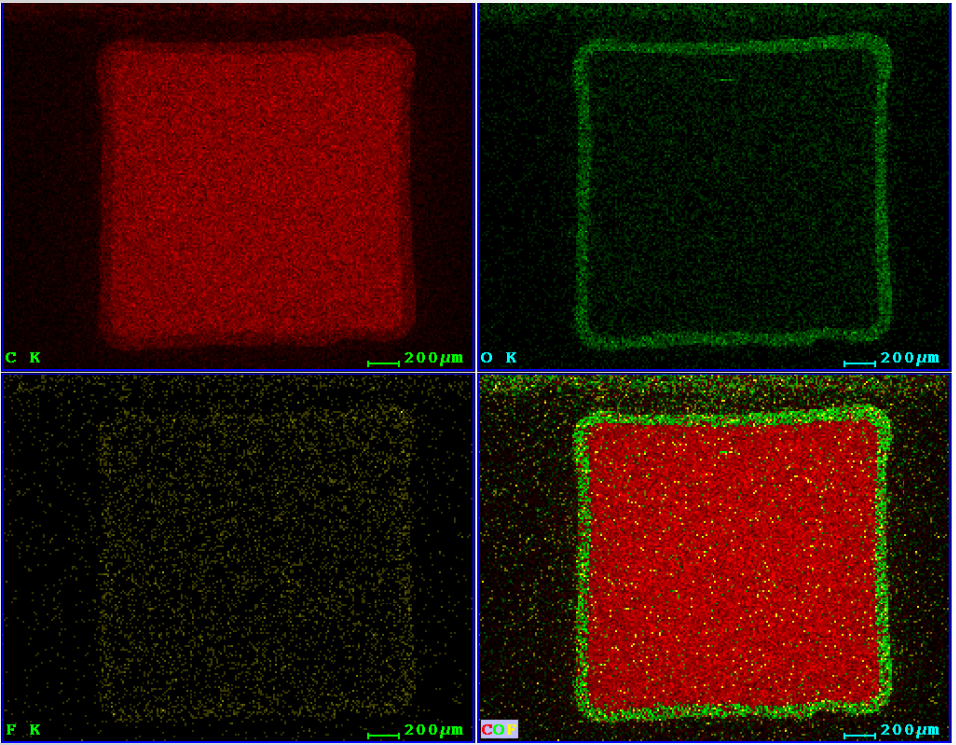


EDX image: new light guide sample

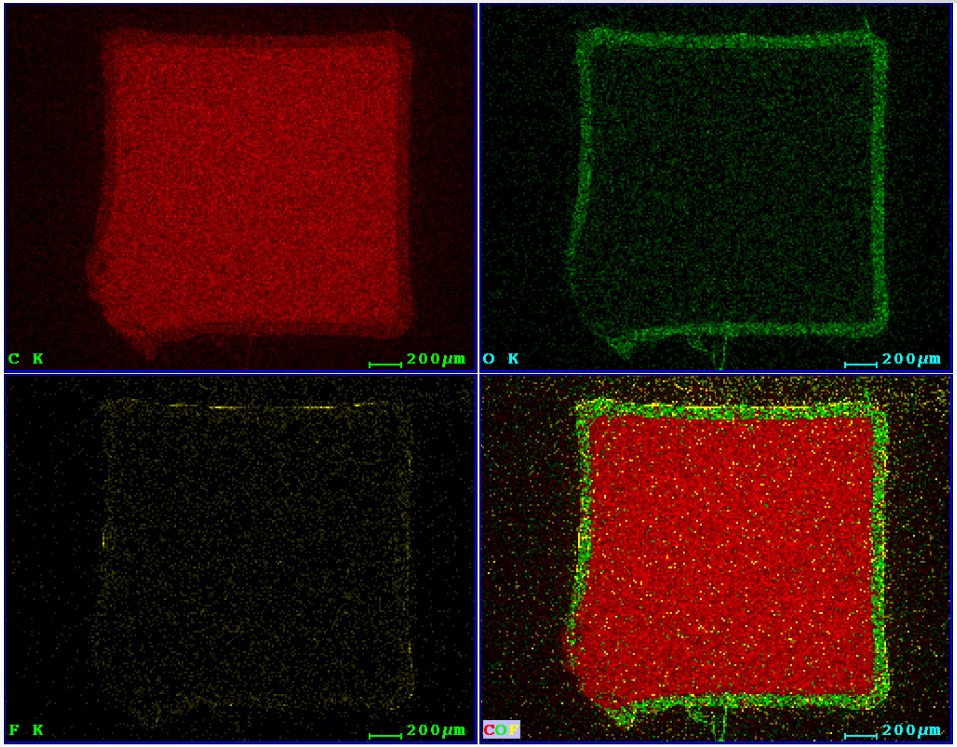


EDX images - light guide cross sections

EDX image: old light guide sample



EDX image: new light guide sample



Conclusions

- the new lg product clearly has an outer fluorinated layer
- it is very thin (5-8 microns vs 40 as claimed in brochure)
- thickness seems irregular, maybe missing in places

Take-away message: *The new product may be marginally better, but repeating the same construction techniques with the new product is not likely to produce much better results.*

A new production method is being tested now