Quantitative analysis of trace components in electronic materials with LC/MS/MS

LC/MS/MS is extremely effective for microanalysis of industrial products including electronics devices, because of its high sensitivity and highly selective quantitative capability.
The applications to quantitative analysis of the trace components are shown here.

1. Quantitative analysis of the trace components eluted to liquid crystals

In the liquid crystal display module, eluted components from the surrounding materials would generate significantly display defect.
We discussed the detection limit of the eluted components using the commercial grade liquid crystals artificially added the trace photo-polymerization initiators with HPLC/UV and LC/MS/MS.

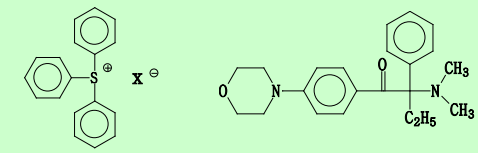
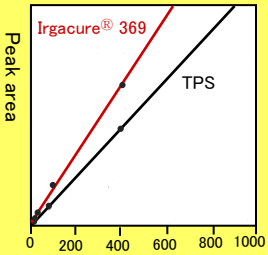
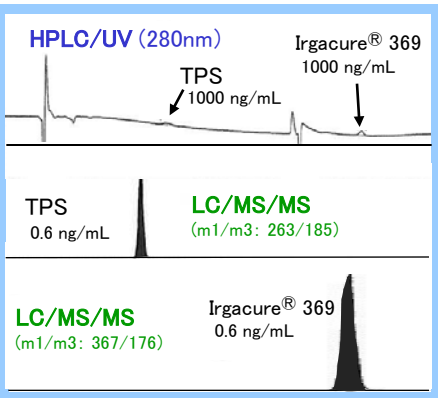


Photo-polymerization initiator



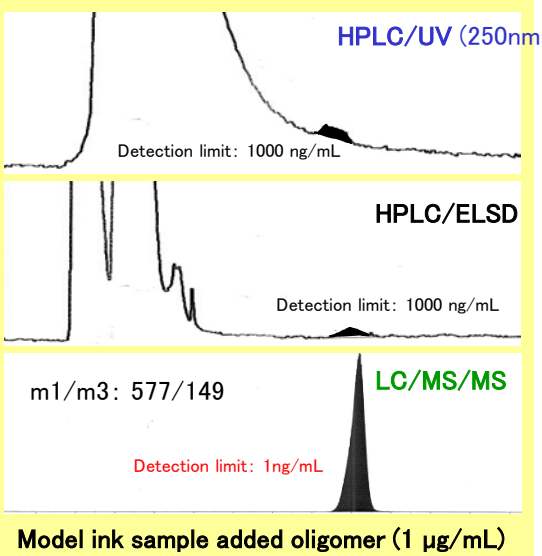


Model sample added initiator

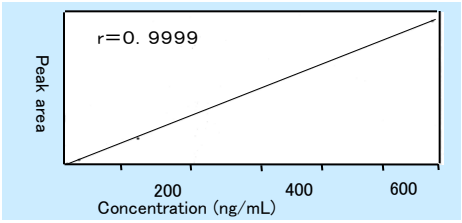
Detection limit: HPLC/UV 1 μg/mL
LC/MS/MS 0.0005 μg/mL

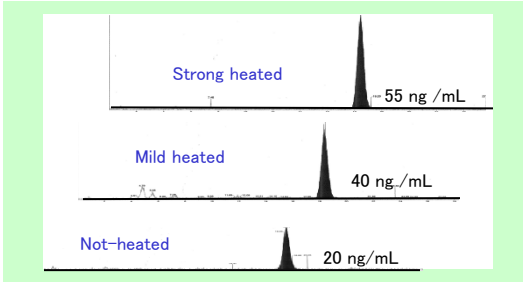
2. Trace organic components eluted to ink

Trace components eluted to ink would generate printing defect.
We analyzed the eluted components from the polyester sheets to the commercial grade ink with HPLC/UV, HPLC/ELSD*, and LC/MS/MS.
*: ELSD (Evapolated Laser Scattering Detector)



Model ink sample added oligomer (1 μg/mL)





The amount of the eluted oligomer to the ink increased with the increase of included oligomer which was generated by heating treatment.