Analysis of Composition of Thin Film Primer Layer (Lens Surface Coating) - Nano IR -

Summary
It has become possible to perform the composition analysis of the primer layer 100nm in thickness which has been difficult with the conventional structural analysis method by making use of the spatial resolution (approx. 100nm) of nano IR.

Principle
Nano IR detects the displacement caused by thermal expansion due to infrared absorption and makes the composition and composition distribution possible at a resolution of approx. 100nm.

Example of analysis
The 560nm-thick primer layer present in the coating on the surface of an optical lens was analyzed, and it was presumed that the composition was urethane modified acrylate.

【Cross-sectional TEM image】

【Form image】

【Nano IR spectrum】

- N-H stretching vibration
- C=O stretching vibration (urethane, isocyanurate)
- C=O stretching vibration (urethane)
- C-N stretching vibration (C-N-H)
- C-H stretching vibration (alkyl chain mixed)

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