

VERIFICATION OF WIRE-GRID POLARIZER COATINGS USING XRF

R. Creighton, S. Cornaby, J. Pierce, J. Van Wagoner, S. Kamtekar, J. Rice, B. Naseath, B. Olson, B. Zundel, F. Lane, L. Munteer, D. Bunting, J. Despain, D. Hammond

Moxtek, Inc.

Moxtek manufactures parts for both X-Ray analysis instrumentation and also wire-grid polarizers, typically used in light engines for overhead projectors. Wire-grid polarizers must be made resistant to moisture for reliability, and this is accomplished with a thin film overcoat of the wire-grid polarizer. Verification that the proper thickness of the thin overcoat deposit has traditionally been a problem. Some methods of verification are destructive, such as water emersion, while others, such as ellipsometry, are ineffective at producing accurate thickness measurements on polarizers due to their complex structure.

To overcome these problems, Moxtek developed an XRF tool using an X-Ray tube, detector, and DPP all manufactured by Moxtek's X-Ray group. The tool is able to verify that an adequate coating has been applied by scanning multiple locations of the polarizer wafer. This tool has the distinct advantage to other metrology techniques as it is nondestructive and is capable of measuring the coating on finalized product directly.