

Recovery of custom substrate surfaces by wet chemical etch-removal of multilayers

Michael D. Kriese and Yuriy Y. Platonov
Rigaku Innovative Technologies, Auburn Hills, MI, USA

While the bulk of our multilayer coatings are performed on relatively inexpensive polished-silicon wafers, expensive custom substrates are often used. In cases where there is an error in the coating due to equipment failure, power failure or calibration drift, it is essential to remove the multilayer and reuse the substrate. Our poster will detail the results of our investigations and validations of a removal process. Multilayer films of W/B4C, W/Si, Mo/Si and Ni/B4C of varying periods on glass and silicon substrates were investigated, with reflectivity results obtained for both hard x-rays (Cu K-alpha) and in the EUV range. Surface analyses with atomic force microscopy and visible-light interferometry & microscopy are used to investigate virgin and recovered surfaces. There is some evidence that multilayer-removals beyond the first behave differently, most likely attributable to the action of the chemicals on the substrate surface that affect adhesion, but in most cases multiple removal is possible.

Email: Michael.Kriese@Rigaku.com

Phone: USA 248-232-6422

Address: 1900 Taylor Road, Auburn Hills, MI, 49326, USA