Imaging Study of STI patterned wafer

We have imaged the ellipticity at 4 different angles of incidence 50°, 55°, 60°, 65° of the sites 213 (partial), 214, 215, 216, 217, 218. One measurement produces x and y images for all these sites in the one exposure, and this is a very convenient method for studying uniformity. Figures 1a and 1b show as example the x and y images for part of site 21 at 60° angle of incidence (wavelength of light 650nm). The area imaged was about 2mm x 6mm, with a resolution 23µ per pixel.

To present the data we have run a line-profile along a horizontal line through the centers of each image, and these are shown in the Figure 2 site 21

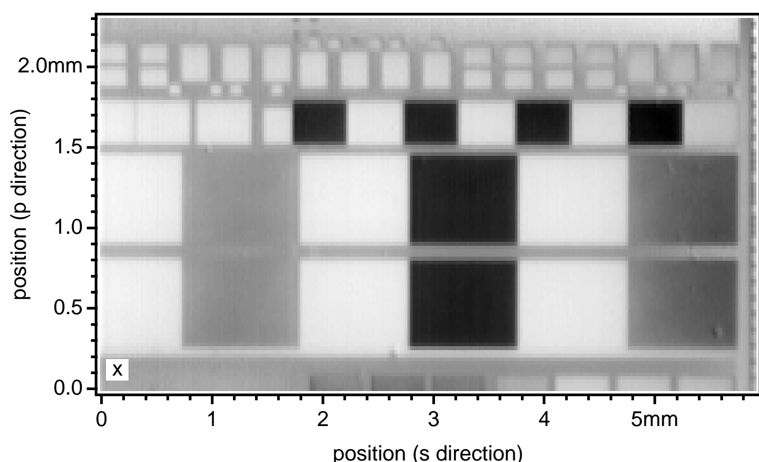

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Figure 1a: Image of x ellipticity, 650nm, 60°, showing parts of site 21- lower squares from left 2131, 2141, ..., 2181, upper squares 2132, 2142, ..2182.

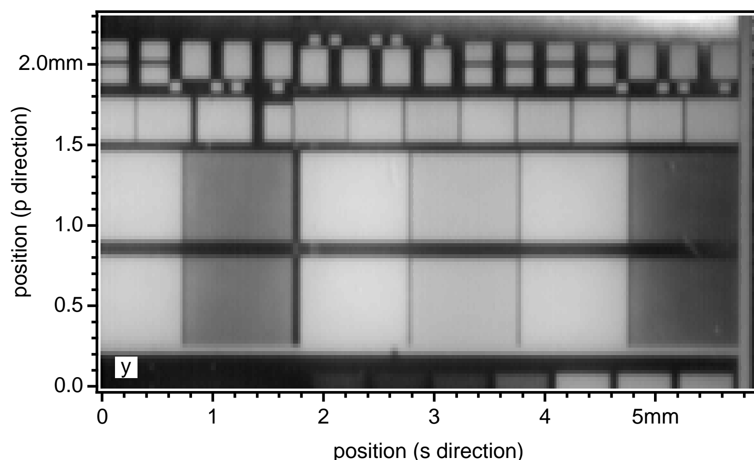

Figure 1b: Image of y ellipticity, 650nm, 60°, showing parts of site 21- lower squares from left 2131, 2141, ..., 2181, upper squares 2132, 2142, ..., 2182.

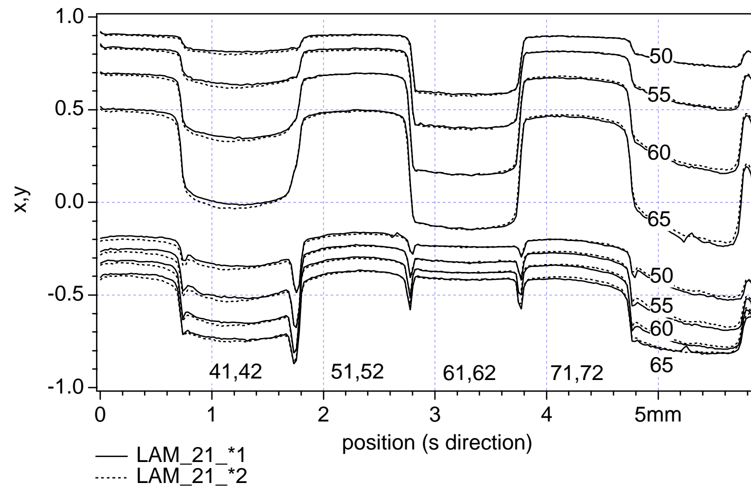

Figure 2: Site 21, line profile for x images (top) and y images (bottom) as a function of horizontal position, for 4 different angles of incidence 50°, 55°, 60°, 65°, and top and bottom sites. Note the curvature across the center of each site indicating dishing, and the rolling off on the right side suggesting layer thickness variation.