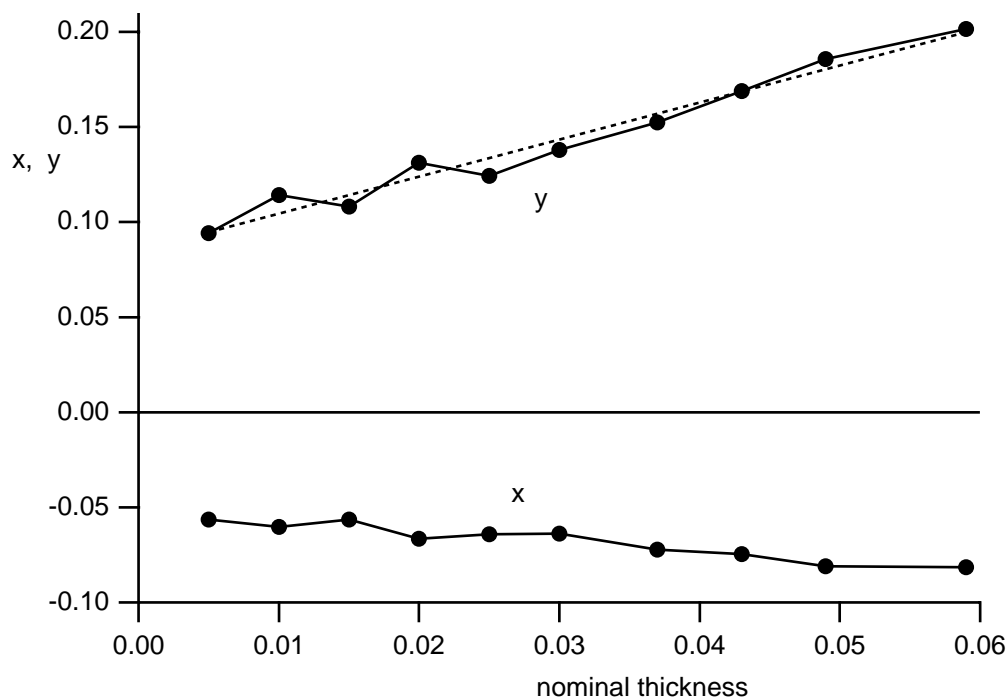


Very thin layers of DLC (Diamond Like Carbon) on silicon

Silicon blanks about 1cm square were coated with a series of thin layers of DLC, which is used to form smooth low friction surfaces. The nominal thickness of the layers varied from 5\AA to 50\AA . The silicon itself has a native oxide present before the DLC coating.

(i) Variation of y with nominal DLC thickness- measurements made near the center of the blanks.



(Note the nominal thickness unit $d = 0.01$ corresponds to 10\AA)

It can be seen that the samples show values which vary about the smooth dotted variation. The nominal 10\AA sample shows a value for y above the dotted line, the 15\AA sample below the dotted line, etc. Thus while the samples follow roughly the expected nominal behaviour, the measured values for y for the very thin samples give a more accurate estimate of their true thicknesses.

The smooth curve extrapolates to a value of $y = 0.08$ for zero nominal thickness. This is a typical value to be expected for a native oxide layer on silicon (thickness 4.2nm). Some of the sample variation could be due to variation in the native oxide thickness. This could only be determined by measurement before deposition of the DLC.