

Figure 1. GIXRD patterns recorded for depth profiling of reference  $\text{ZrO}_2$  film (a) and for films grown with  $\text{ZrO}_2$ :  $\text{Al}_2\text{O}_3$  ALD cycle ratios of 19:1 (b), 14:1 (c) and 9:1 (d) on TiN substrate. The scattering depth values and incidence angles ( $\alpha_i$ ) are shown as labels at the patterns. Reflections for tetragonal, cubic and monoclinic zirconia phase are denoted by subscripts T, C and M, respectively.

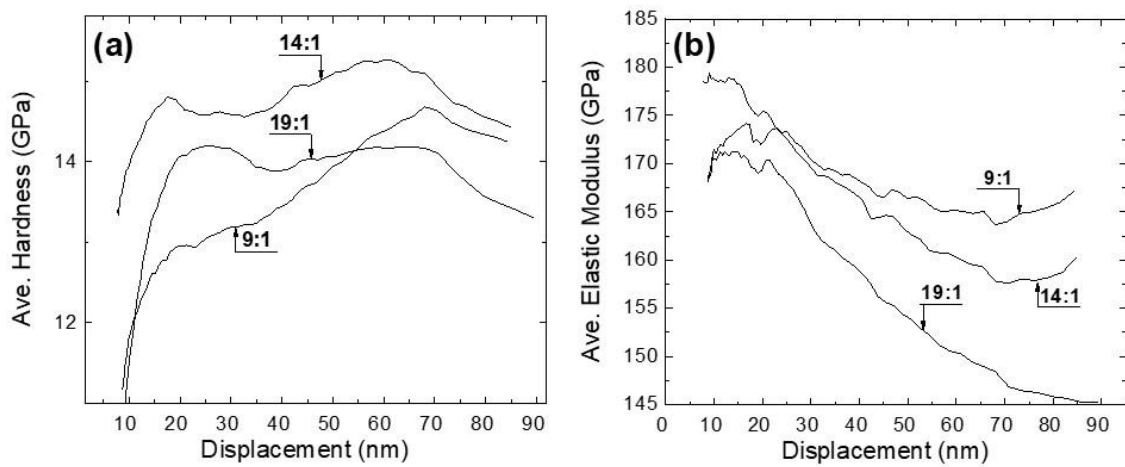


Figure 2. Average hardness (a) and elastic modulus (b) values of 30 measurements performed on films grown with  $\text{ZrO}_2$ :  $\text{Al}_2\text{O}_3$  cycle ratios indicated by labels.