

Figure 1 –GPC as a function of a)  $\text{Mo(CO)}_6$  pulse time, b)  $\text{O}_3$  pulse time, c)  $\text{Mo(CO)}_6$  purge time, and d)  $\text{O}_3$  purge time, as determined by in-situ spectroscopic ellipsometry (SE).

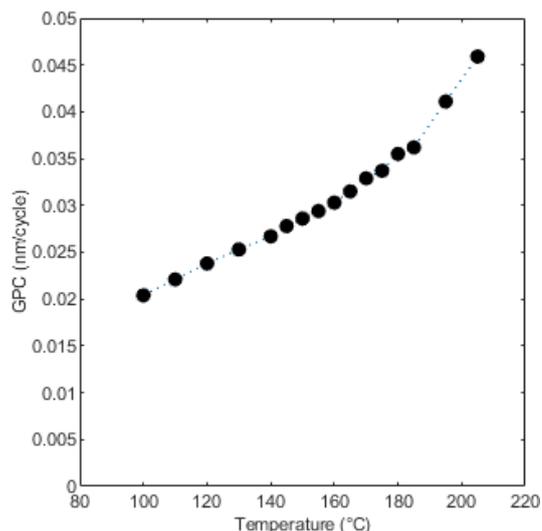


Figure 2 –GPC as a function of process temperature, as determined by in situ SE. The sharper increase of GPC above 185 °C is attributed to  $\text{Mo(CO)}_6$  decomposition.

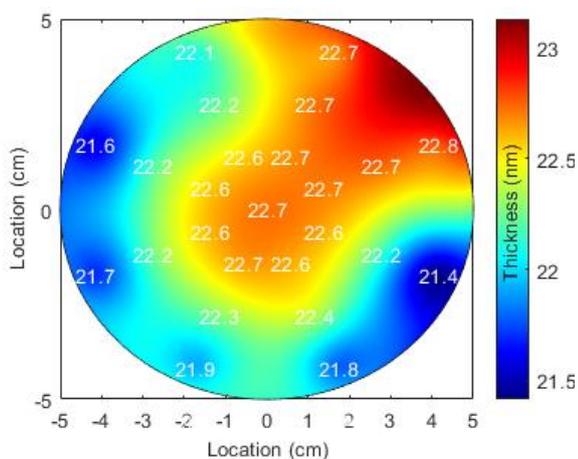


Figure 3 – $\text{MoO}_3$  film thickness mapping on a 100 mm wafer, as determined by ex-situ SE. Variations in the uniformity have been limited to 3%, indicating the self-limiting nature of the process in agreement with Fig. 1. The thickness is slightly higher near the  $\text{Mo(CO)}_6$  gas inlet (top-right).

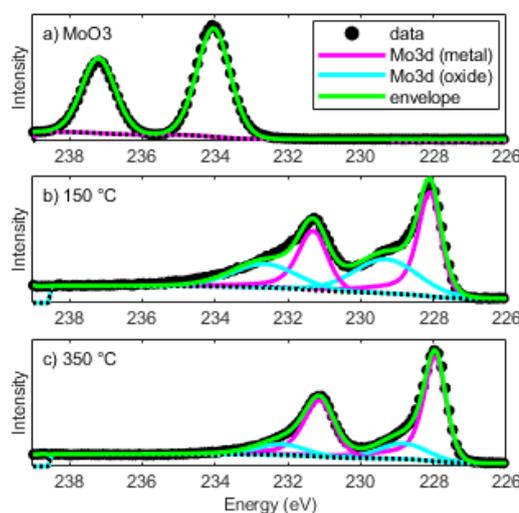


Figure 4 – Mo3d peak positions from XPS for a) pure  $\text{MoO}_3$ , b) after reduction of  $\text{MoO}_3$  at 150 °C for 30 min in at-H, and c) after reduction of  $\text{MoO}_3$  at 350 °C for 30 min in at-H.

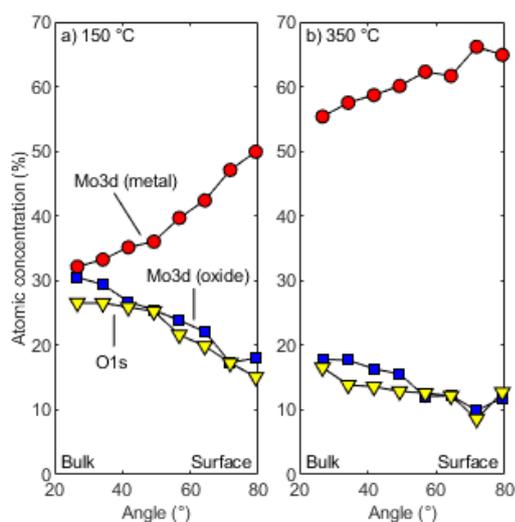


Figure 5 – Angle-resolved XPS measurements after at-H reduction of  $\text{MoO}_3$  for 30 min at a) 150 °C and b) 350 °C.

#### References:

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