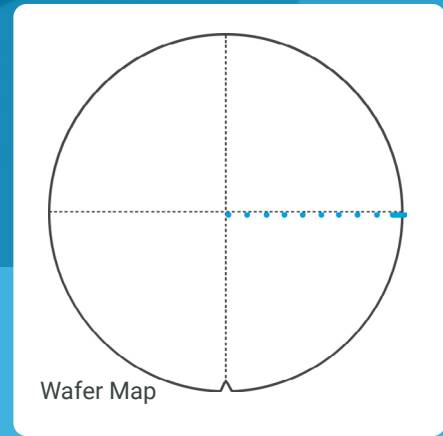


ULTRATHIN FILM THICKNESS

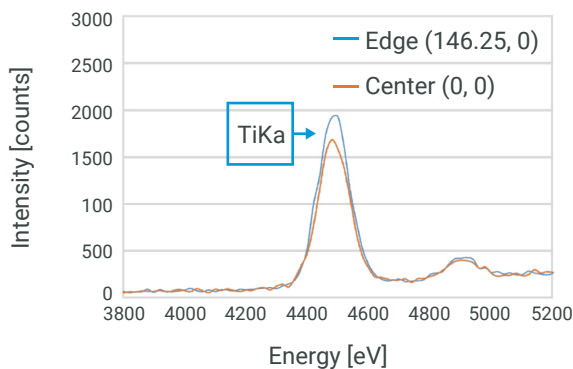


FEOL WAFER PROCESSING / BLANKET WAFER

SITE COMPARISON OF 3 nm TiN LAYER – TITANIUM NITRIDE

- XRF spectra comparison of two sites of TiN, 3 nm nominal thickness.
- Ultrahigh sensitivity to thickness variation of down to 1 Å was demonstrated.
- The titanium peak was measured.

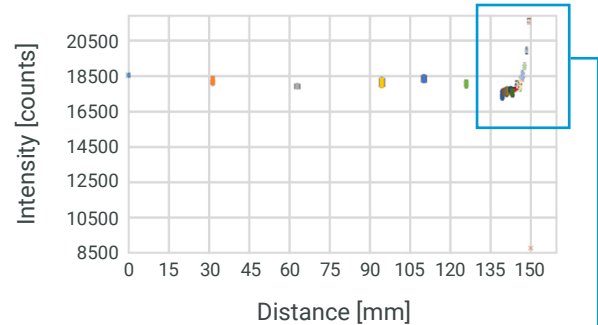
2 SITES – TITANIUM NITRIDE FILM



REPEATABILITY VS. ACROSS-WAFER VARIATION – COBALT

- These graphs represent the process variation and tool precision of ultrathin film of cobalt.
- The layer thickness is 3 nm.
- The error bars represent 1σ error, based on 10 repetitions.

HALF WAFER SCAN – COBALT FILM



WAFER EDGE SCAN – COBALT FILM

