

## **TiW(4wt%) Film by DC Co-Sputtering in Sputter#3 (2024-2025)**

Fatt Foong

Goal: Lower Ti (4-5% wt%Ti) TiW thin film from W and TiW(10wt%Ti) targets.

Targets: W target in Gun1; TiW (10wt%Ti) in Gun3

Gun position: Gun1, DC5, SW4 (5/15/25) and Gun3, DC1 (no switch).

Sputter Pressure: Ar flow 25 sccm at 4.5mTorr

Power: 50Watt on W target, no substrate bias and substrate temperature applied.

Substrate parameters: Tilt 4mm preset for both guns; 1.52mm Height, rotation 10/min

Temperature: Room Temperature, 4" wafer mounted on thick holder (as heat sink)

Base Pressure: <1e-7 Torr

### **Film Properties**

Confirmed the stress crossover is ~4.5mTorr at room temperature deposition.

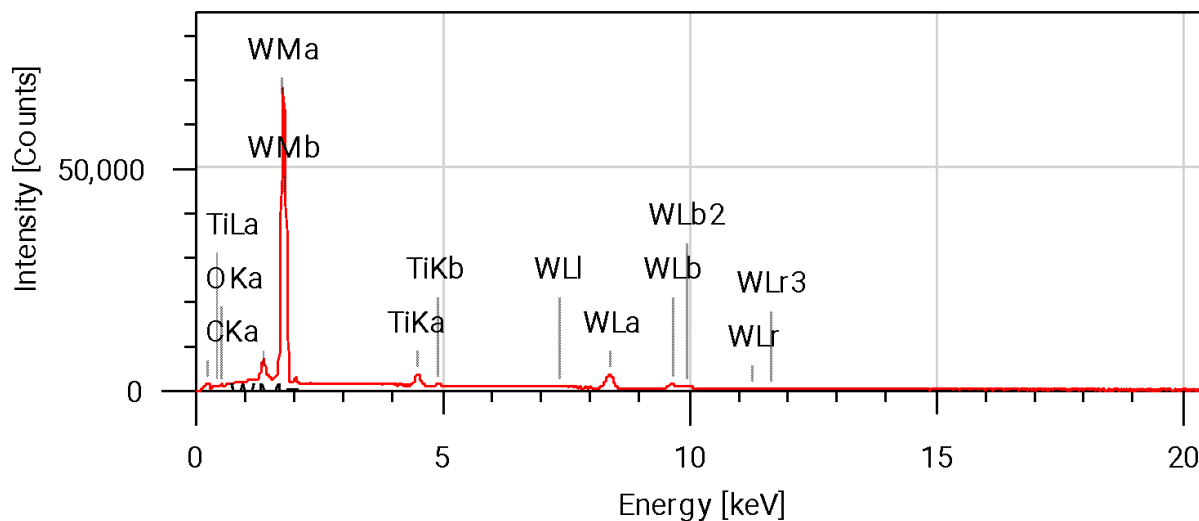
Average stress is approximately -60 MPa to + 140 MPa depending on conditions of the system. Users should pre-test film stress if that is critical, by adjusting sputter pressure slightly.

### **Film Properties:**

Resistivity averages about 55  $\mu$ Ohms-cm.

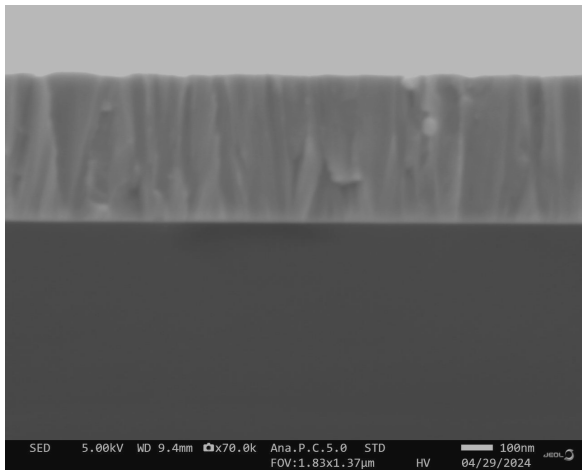
Deposit Rate ~ 16 nm/min

### **Composition EDAX:**



Element	Line	Mass%	Atom%
C	K	1.82±0.02	19.54±0.17
O	K	0.41±0.01	3.31±0.10
Ti	K	4.32±0.04	11.62±0.10
W	M	93.45±0.18	65.52±0.13
Total		100.00	100.00
Spc_001		Fitting ratio 0.0146	

SEM:



Uniformity 3 sigma ~5.2%, this is total uniformity.

