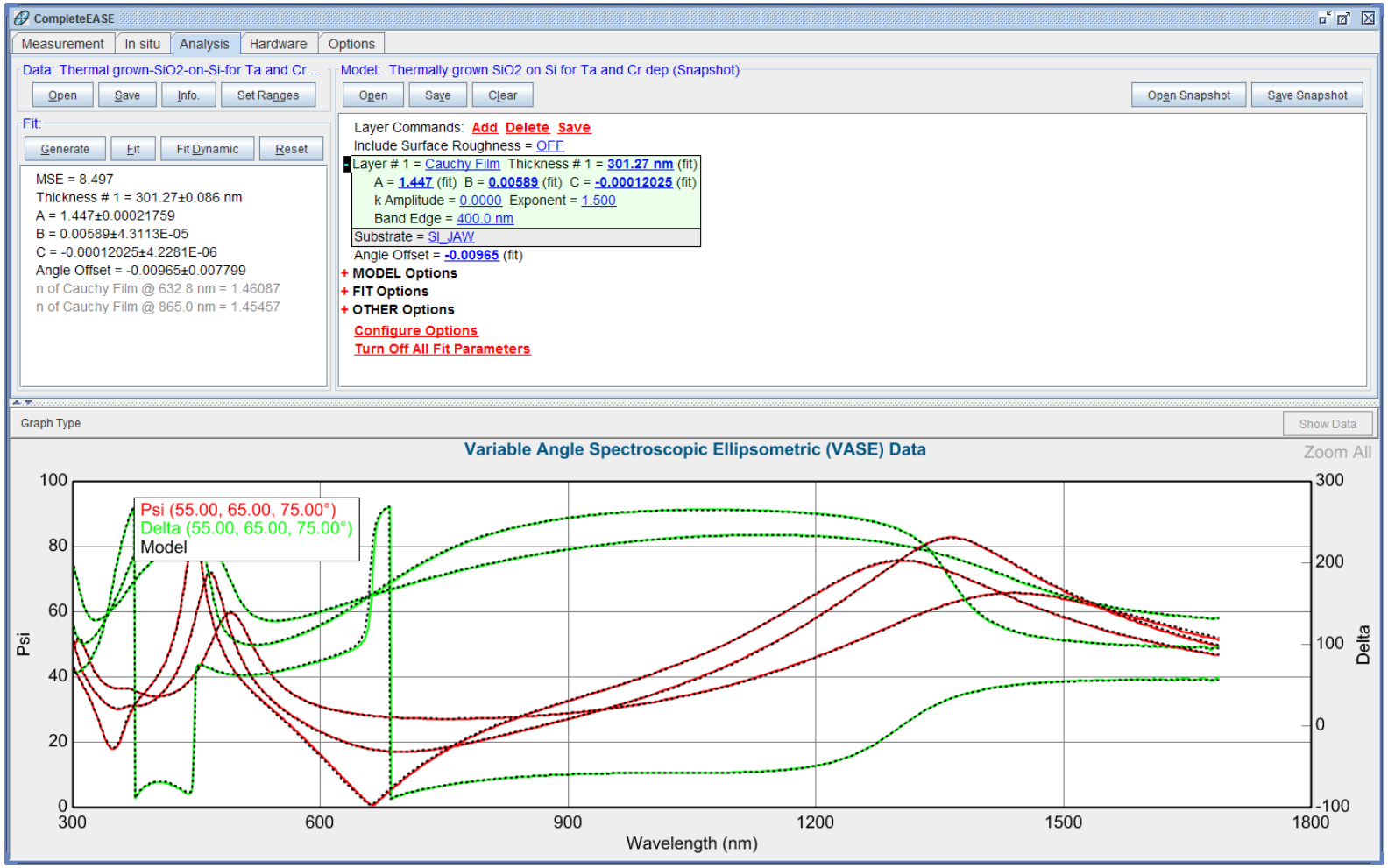
Ning Cao, Staff Engineer, Nano-fabrication Lab, UCSB

Tantalum and Chromium E-beam Deposition and Wet Etch Testing

Experimental:

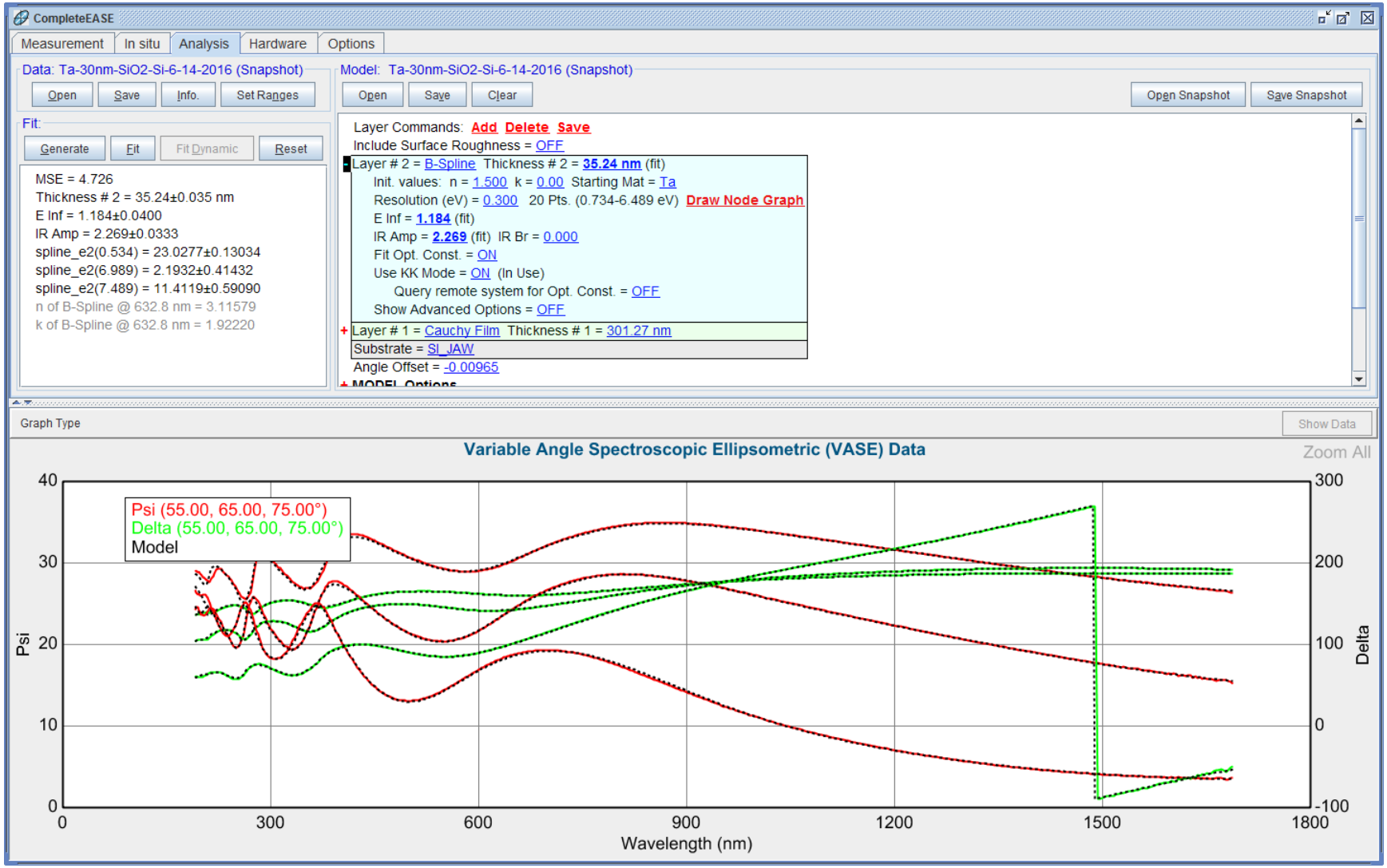
1) Sample: Thermal SiO2 on one-side polished Si

Elliposometer:



Ning Cao, Staff Engineer, Nano-fabrication Lab, UCSB

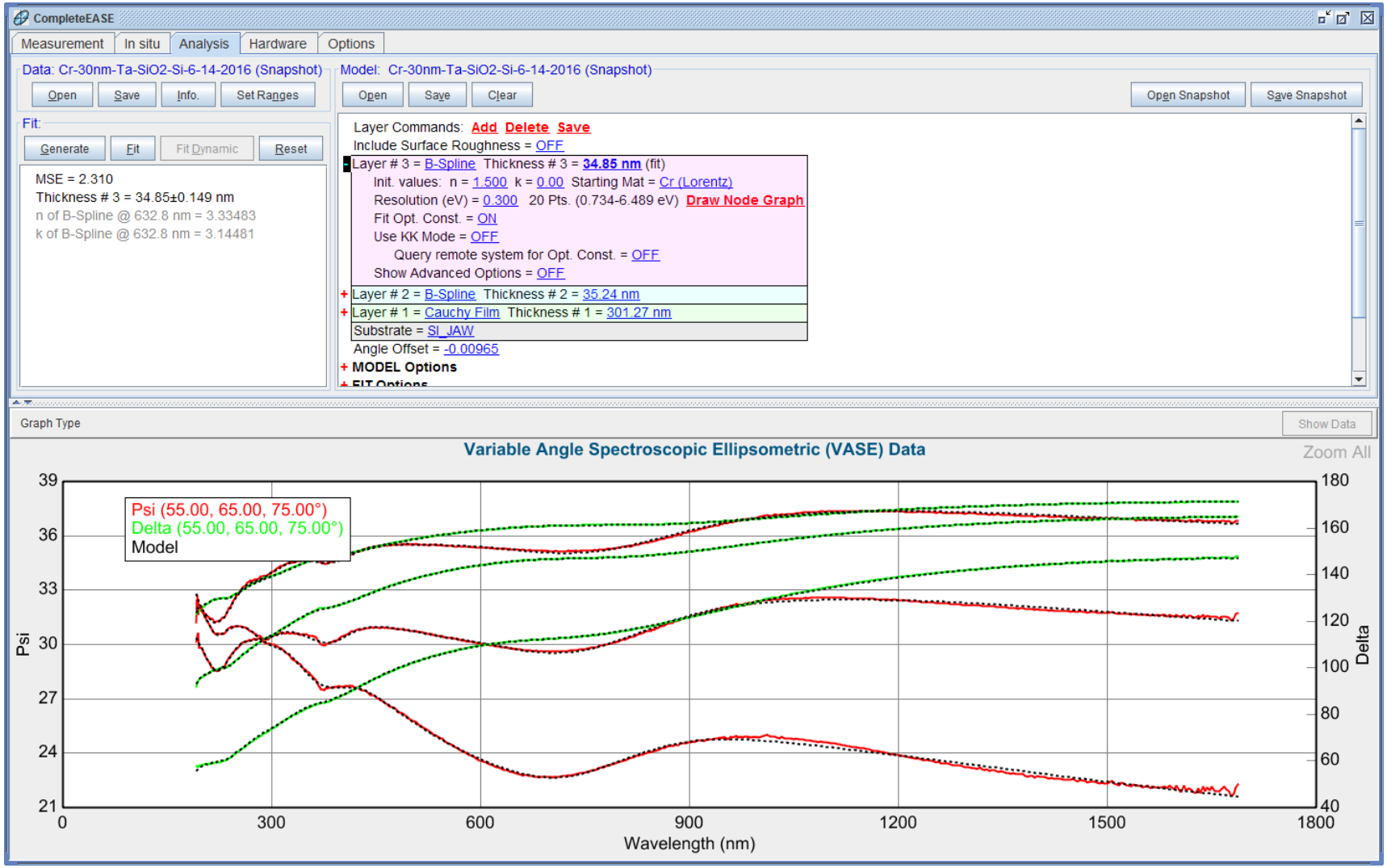
2) Tantalum deposition using E-beam#1 (Density=16.6 g/cm3; z-Ratio=0.262; Tooling Factor=140; target thickness=30 nm, Rate: 0.5~1.0 Å/s)



Actual Ta thickness=35.24 nm.

Ning Cao, Staff Engineer, Nano-fabrication Lab, UCSB

3) Chromium deposition using E-beam#1 (Density=7.2 g/cm3; z-Ratio=0.305; Tooling Factor=140; target thickness=30 nm, Rate: ~2.0 Å/s)

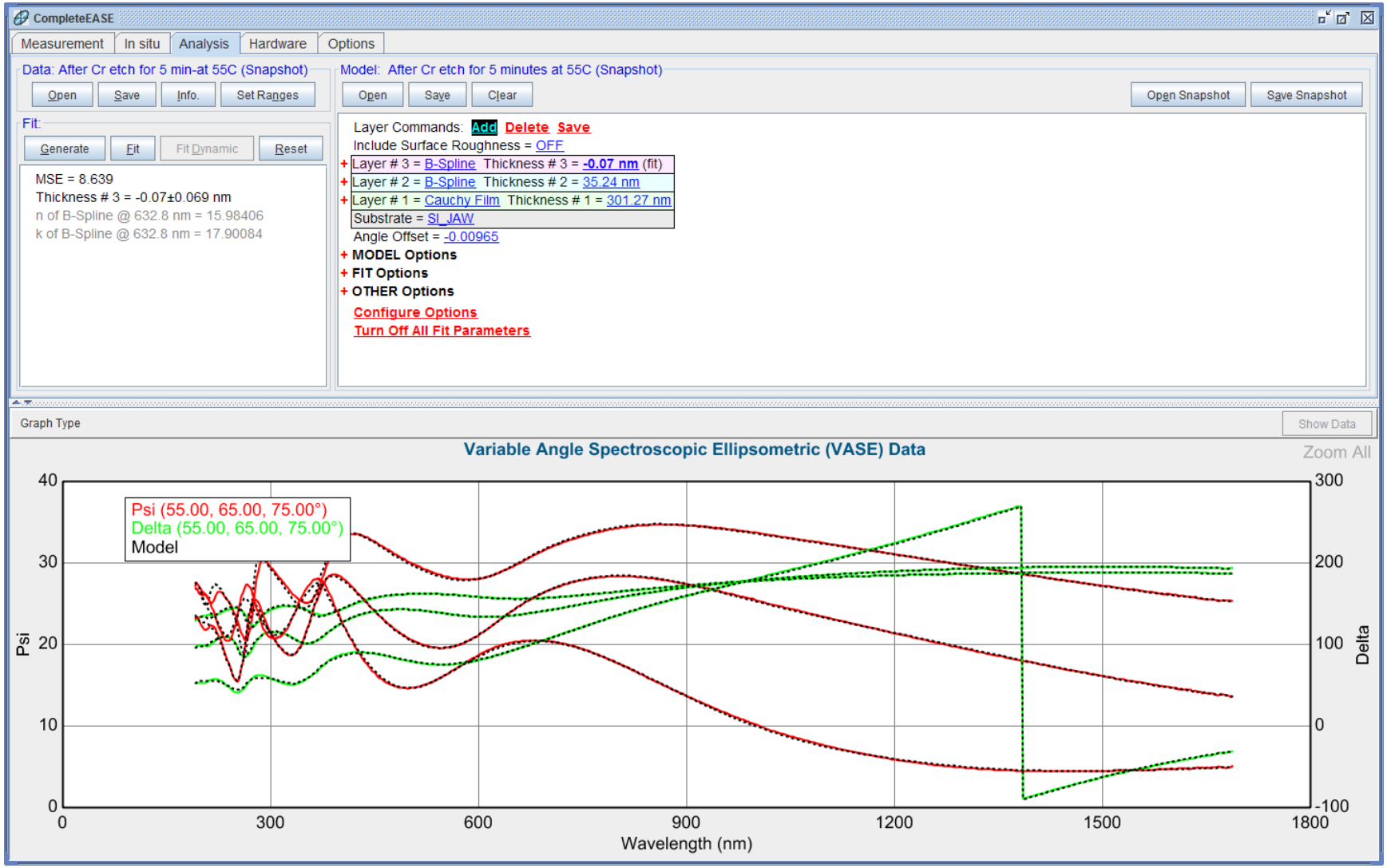


Actual Cr thickness=34.85 nm.

Ning Cao, Staff Engineer, Nano-fabrication Lab, UCSB

4) Wet Etch of Cr over Ta

Pouring Cr Etchant in glass cup, heat it on a hot plate, set at 55°C, with a glass cover for 1 hour. Etching a sample piece, cut from the whole sample, for 5 minutes. The result: the Cr layer was gone without etching underneath Ta layer.



Ning Cao, Staff Engineer, Nano-fabrication Lab, UCSB

Note: Cr etch rate of this etchant is 40 Å/s at 40^{o}C.