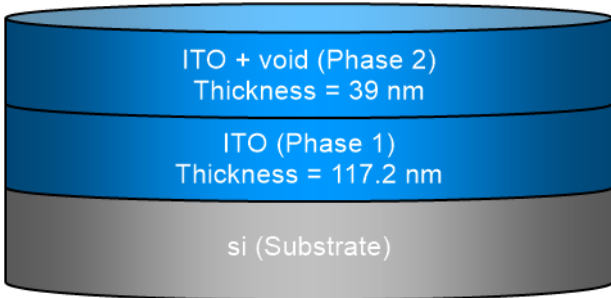


SEA regression report summary

Sample ID
001d-int-i 70° 1

Details	
Software and regression log	
Software about	Semilab - Spectroscopic Ellipsometry Analyzer - SEA
Software version	1.7.1
Officially licensed to	MIT
Operator	operator
Date and time of regression	14-07-2021 13:59
Comments	

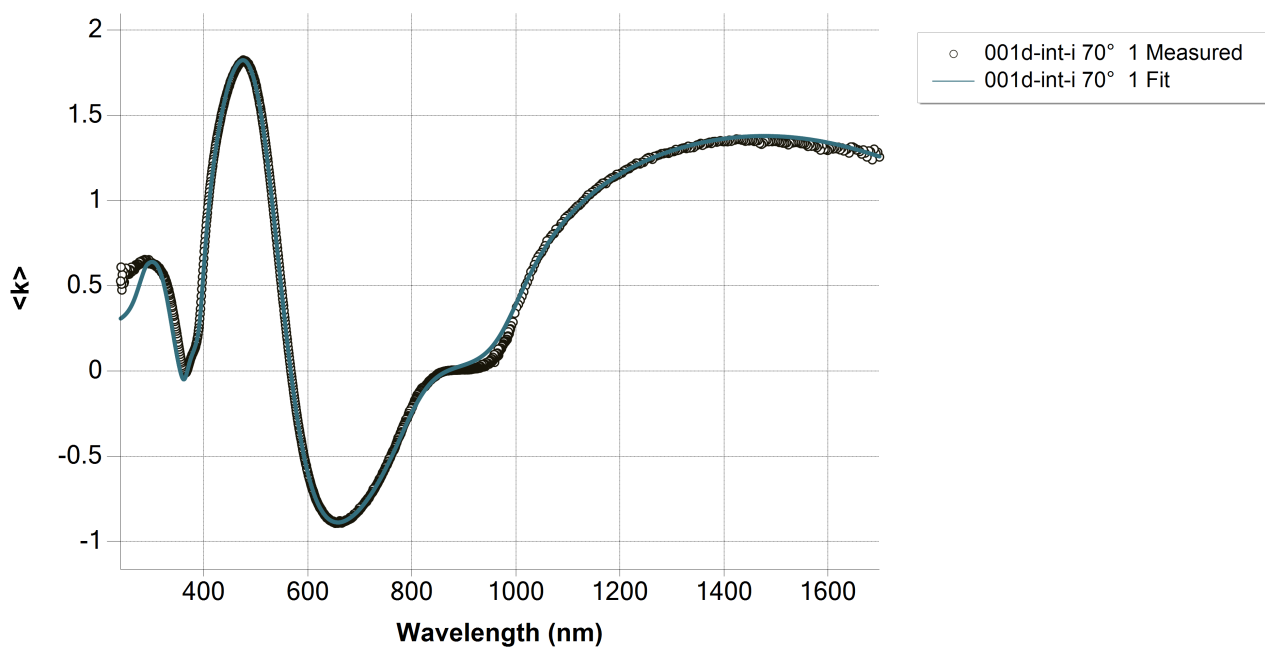
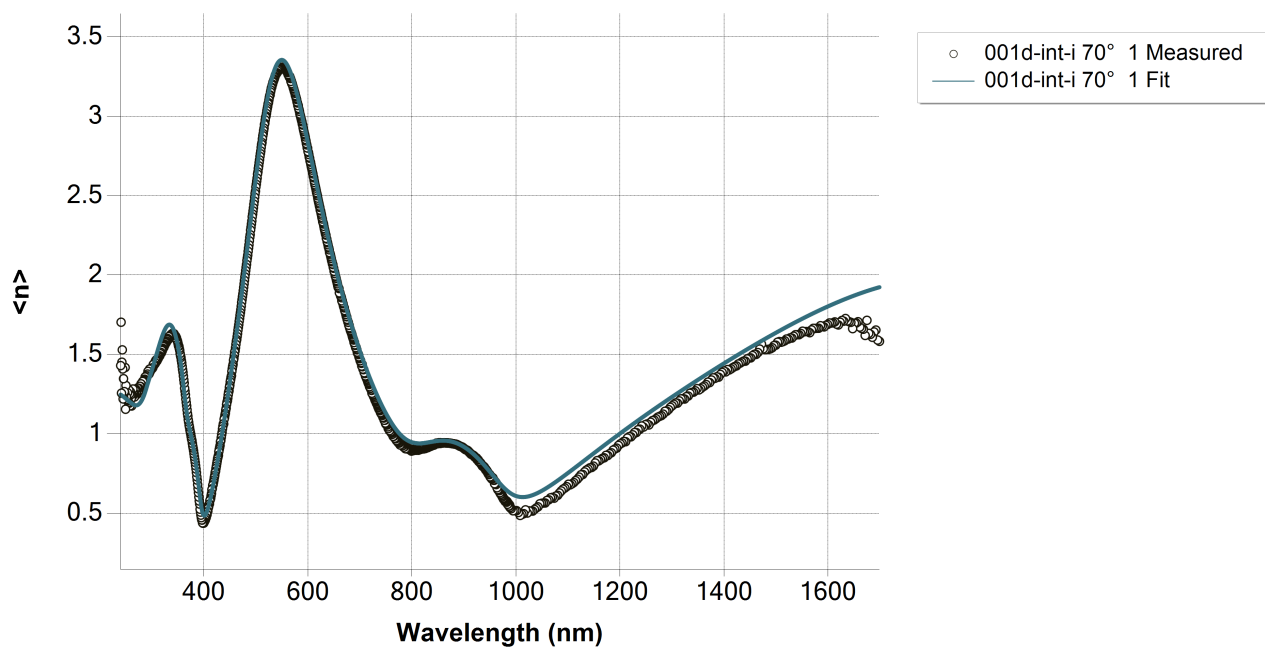
Layer structure	
Overview	
	
Optical model	
Phase 2	ITO + void
Diffusion	
Phase 1	ITO
Dispersion law	Tauc-Lorentz
	Drude
	Lorentz

Regression results

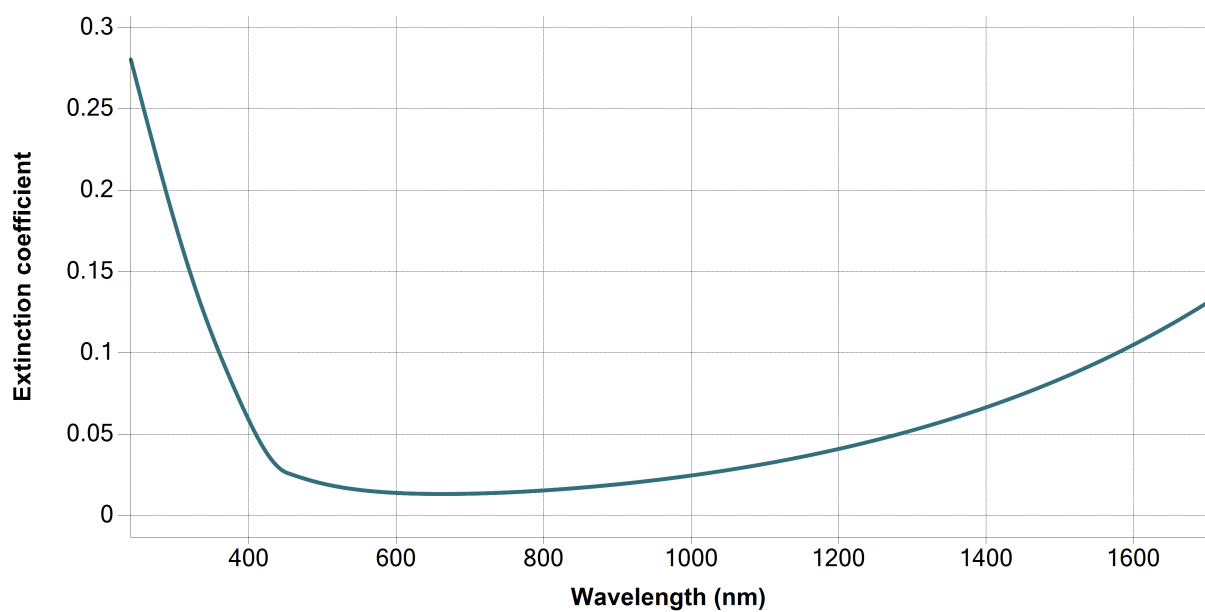
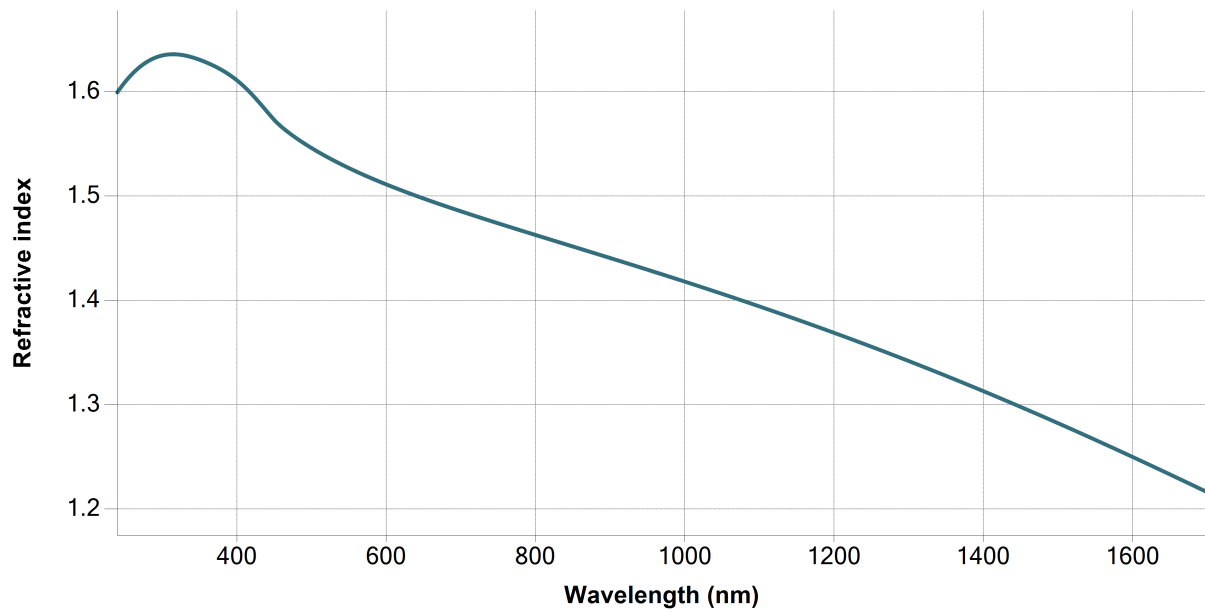
Measurement information				
Measurement file path	C:\Users\emmabat\lito-sil\001d-int-i.smdx			
Angle of Incidence	70°			
Regression details				
Regression 1 (EllipsoReflectance)				
Wavelength range	239.84 - 1698.83 nm			
Angle of Incidence	70°			
Fit to	<n>, <k>			
Angular Aperture	0°			
Fit algorithm	LMA			
Results				
Parameters	Value	Fitted	2 σ confidence limit	Unit
Model				
AOI Shift	0			°
Angular Aperture	0			°
Phase 2 (ITO + void)				
Thickness	38.981	X	0.22613	nm
Depolarization coefficient	0.33333			
Concentration 1	0.5			
Concentration 2	0.5			
Phase 1 (ITO)				
Thickness	117.173	X	0.23692	nm
A (eV)	467.79032			eV
E0 (eV)	7.00559			eV
C (eV)	49.99994			eV
Eg (eV)	2.73982			eV
E_p (eV)	1.16645	X	0.0070546	eV
E_Γ (eV)	0.24995	X	0.011592	eV
f	0.13434	X	0.0052519	
E0 (eV)	3.20441	X	0.032981	eV
Γ (eV)	1.37989	X	0.06867	eV
Eps_inf	0			
Derived parameters	Value			
Phase 2 (ITO + void)				
n @ 632.8 nm	1.502			
k @ 632.8 nm	0.0134			
Phase 1 (ITO)				
n @ 632.8 nm	2.0624			
k @ 632.8 nm	0.0294			
Substrate (si)				
n @ 632.8 nm	3.8811			
k @ 632.8 nm	0.0195			
Drude derived parameters	Value			Unit
Phase 1 (ITO)				
Conductivity (S/m)	7.3226E+04 ± 4281.8091			S/m

Resistivity (mΩ.cm)	1.3656 ± 0.0799	mΩ.cm
Resistance (Ω/sq)	116.5494 ± 7.0508	Ω/sq
N type dopant concentration (at/cm ³)	2.4669E+20 ± 2.984E+18	at/cm ³
P type dopant concentration (at/cm ³)	3.6511E+20 ± 4.4163E+18	at/cm ³
N type dopant mobility (cm ² /Vs)	18.5266 ± 1.1063	cm ² /Vs
P type dopant mobility (cm ² /Vs)	12.518 ± 0.7475	cm ² /Vs
Fit quality		
R ²	0.99421	
RMSE	0.05838	

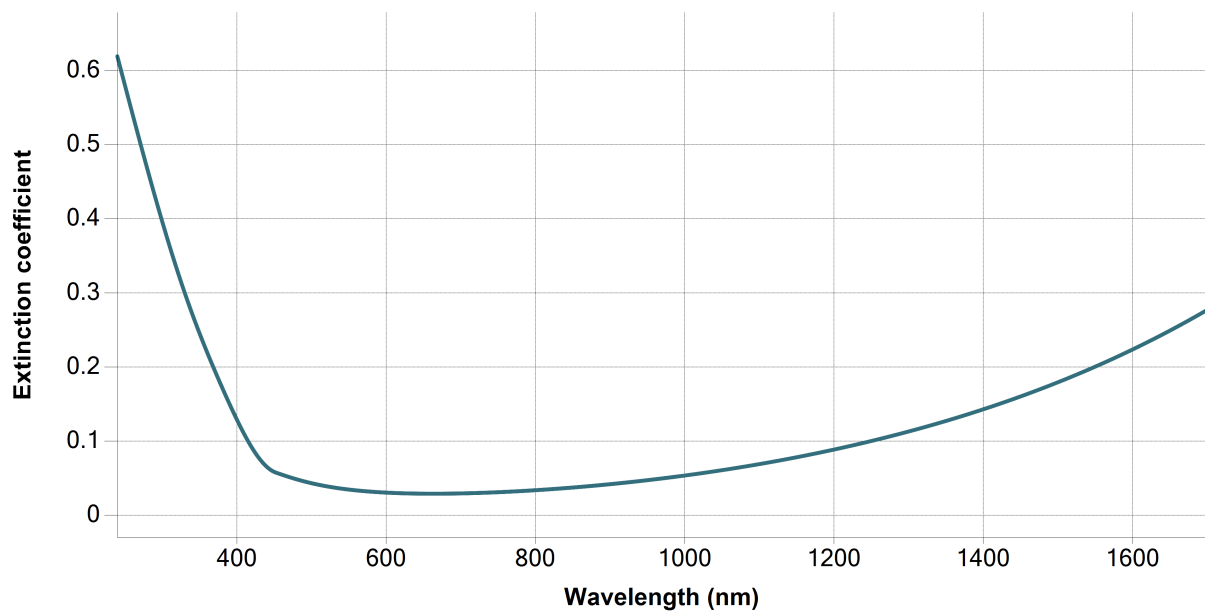
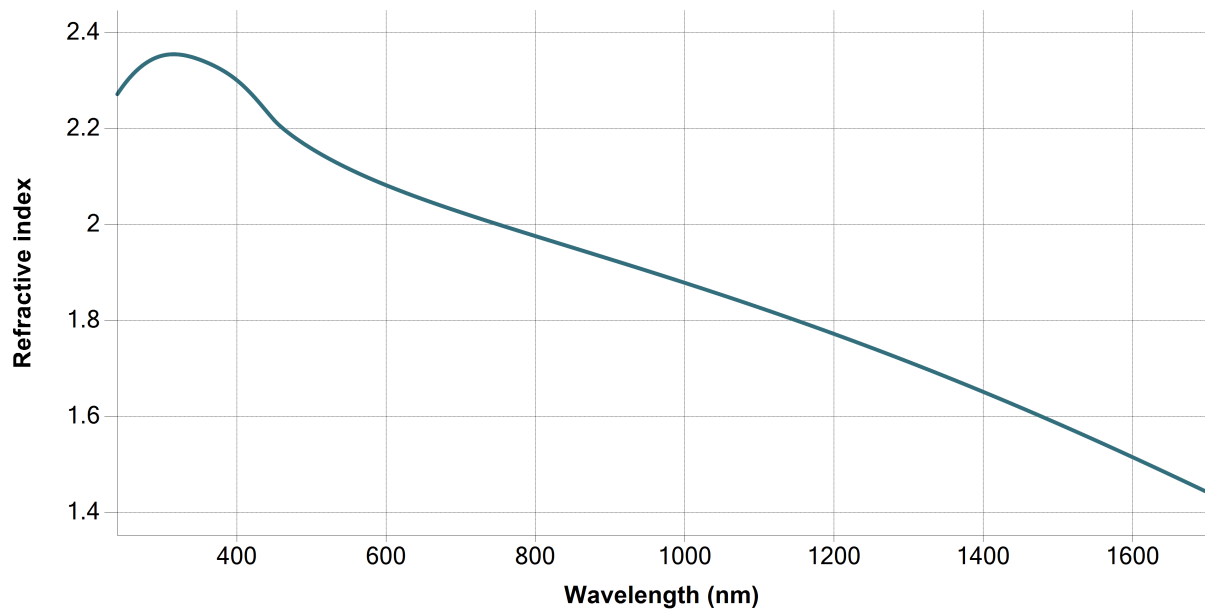
Regression graphs



Phase 2 (ITO + void) - Dispersion graphs



Phase 1 (ITO) - Dispersion graphs



Substrate (si) - Dispersion graphs



Correlation coefficients							
	Ph2 - ITO + void - Thickness	Ph1 - ITO - Thickness	Ph1 - Drude[2] - E _p (eV)	Ph1 - Drude[2] - E _Γ (eV)	Ph1 - Lorentz[3] - f	Ph1 - Lorentz[3] - E0 (eV)	Ph1 - Lorentz[3] - Γ (eV)
Ph2 - ITO + void - Thickness	1	-0.705	-0.2627	-0.0246	-0.0964	0.0118	-0.1674
Ph1 - ITO - Thickness		1	0.5554	0.2481	-0.3318	-0.4286	0.0034
Ph1 - Drude[2] - E _p (eV)			1	0.1592	0.0615	-0.122	0.1086
Ph1 - Drude[2] - E _Γ (eV)				1	-0.4993	-0.2981	-0.3827
Ph1 - Lorentz[3] - f					1	0.7402	0.725
Ph1 - Lorentz[3] - E0 (eV)						1	0.6323
Ph1 - Lorentz[3] - Γ (eV)							1