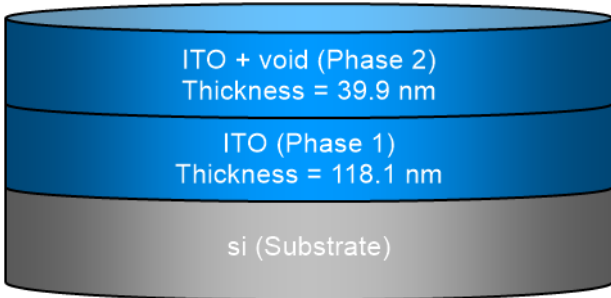


SEA regression report summary

Sample ID
001d-int-ii 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 14:00
Comments	

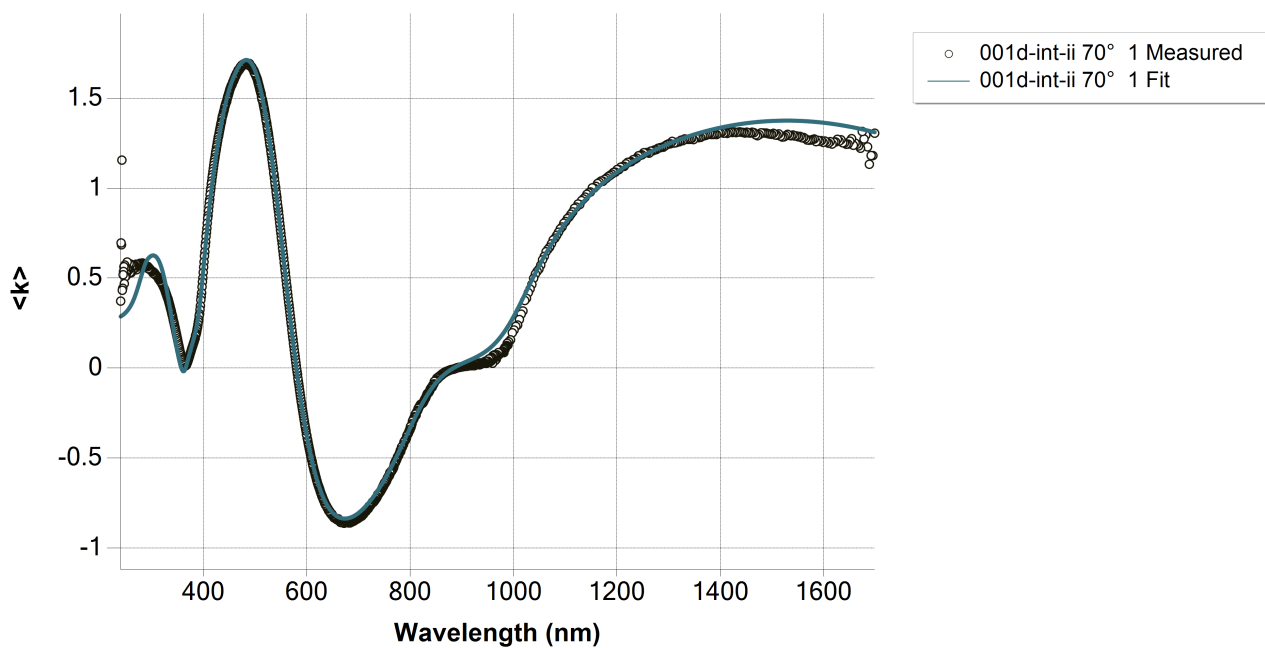
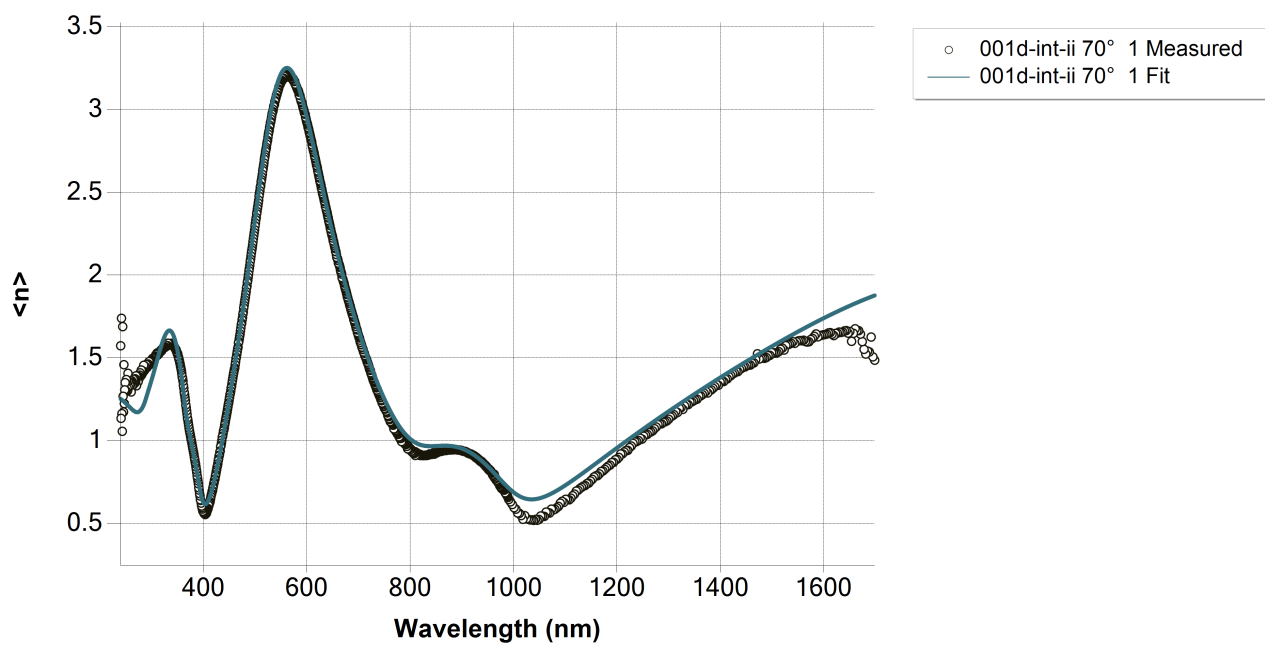
Layer structure	
Overview	
	
Optical model	
Phase 2	ITO + void
Diffusion	
Phase 1	ITO
Dispersion law	Tauc-Lorentz
	Drude
	Lorentz

Regression results

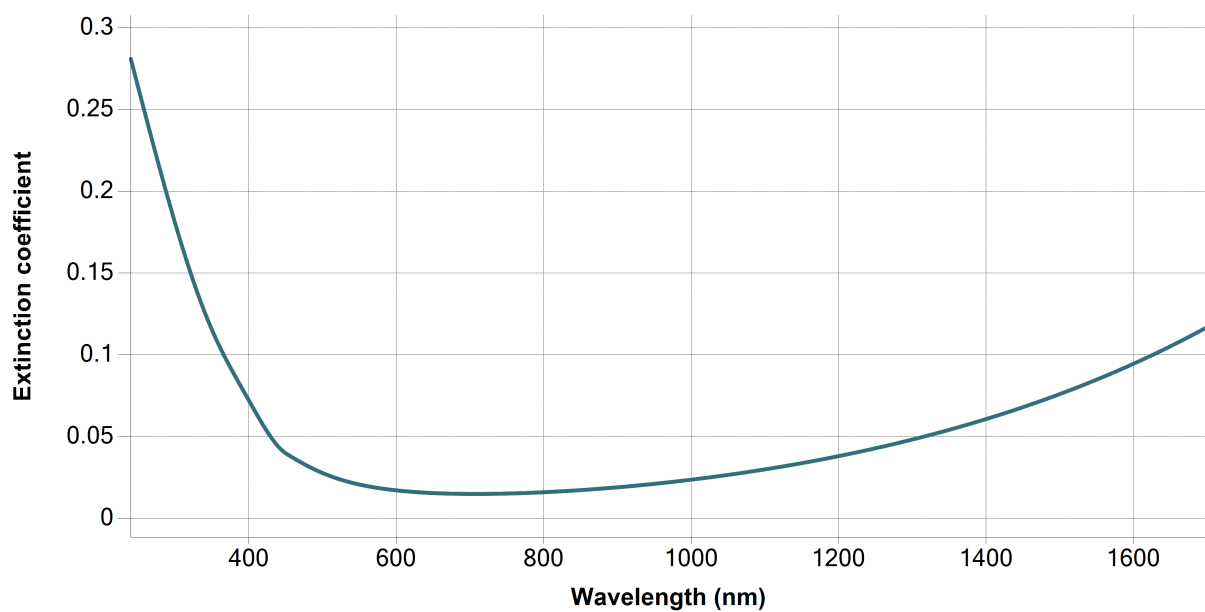
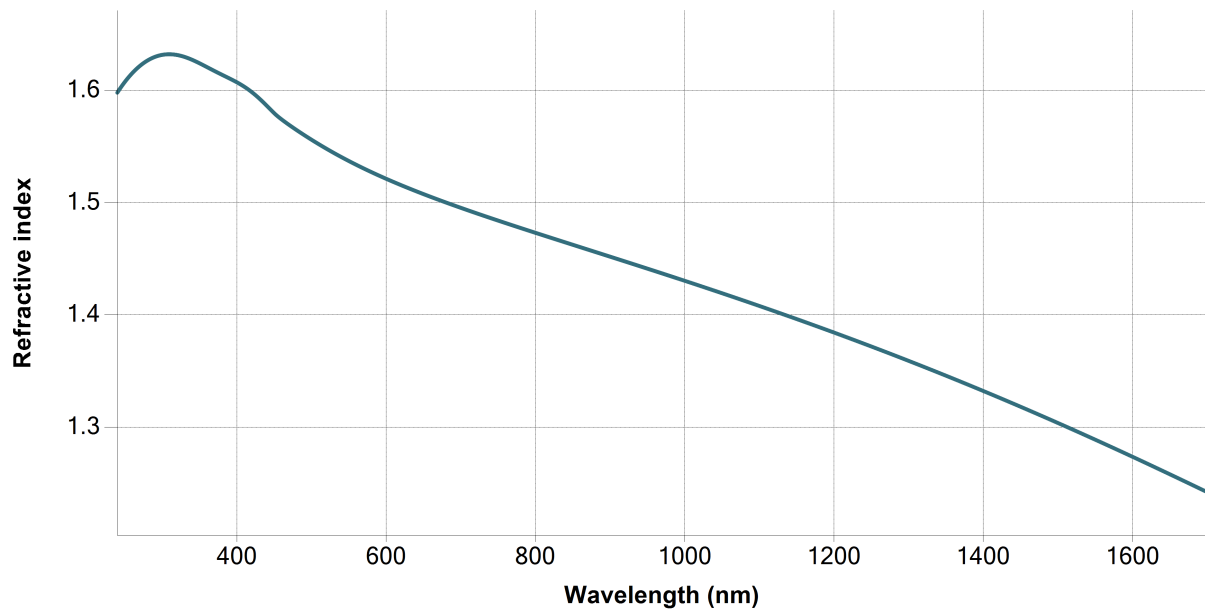
Measurement information				
Measurement file path	C:\Users\emmabat\lito-sil\001d-int-ii.smdx			
Angle of Incidence	70°			
Regression details				
Regression 1 (EllipsoReflectance)				
Wavelength range	239.84 - 1698.83 nm			
Angle of Incidence	70°			
Fit to	<n>, <k>			
Angular Aperture	0°			
Fit algorithm	LMA			
Results				
Parameters	Value	Fitted	2 σ confidence limit	Unit
Model				
AOI Shift	0			°
Angular Aperture	0			°
Phase 2 (ITO + void)				
Thickness	39.913	X	0.26086	nm
Depolarization coefficient	0.33333			
Concentration 1	0.5			
Concentration 2	0.5			
Phase 1 (ITO)				
Thickness	118.118	X	0.26969	nm
A (eV)	467.79032			eV
E0 (eV)	7.00559			eV
C (eV)	49.99994			eV
Eg (eV)	2.73982			eV
E_p (eV)	1.12999	X	0.0088775	eV
E_Γ (eV)	0.24588	X	0.014627	eV
f	0.17688	X	0.0056583	
E0 (eV)	3.09265	X	0.022838	eV
Γ (eV)	1.21169	X	0.050182	eV
Eps_inf	0			
Derived parameters	Value			
Phase 2 (ITO + void)				
n @ 632.8 nm	1.5121			
k @ 632.8 nm	0.0159			
Phase 1 (ITO)				
n @ 632.8 nm	2.0844			
k @ 632.8 nm	0.0349			
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)	6.9857E+04 ± 5253.31			S/m

Resistivity (mΩ.cm)	1.4315 ± 0.1077	mΩ.cm
Resistance (Ω/sq)	121.1926 ± 9.3905	Ω/sq
N type dopant concentration (at/cm ³)	2.3151E+20 ± 3.6377E+18	at/cm ³
P type dopant concentration (at/cm ³)	3.4264E+20 ± 5.3838E+18	at/cm ³
N type dopant mobility (cm ² /Vs)	18.8331 ± 1.4469	cm ² /Vs
P type dopant mobility (cm ² /Vs)	12.725 ± 0.9776	cm ² /Vs
Fit quality		
R ²	0.99197	
RMSE	0.06612	

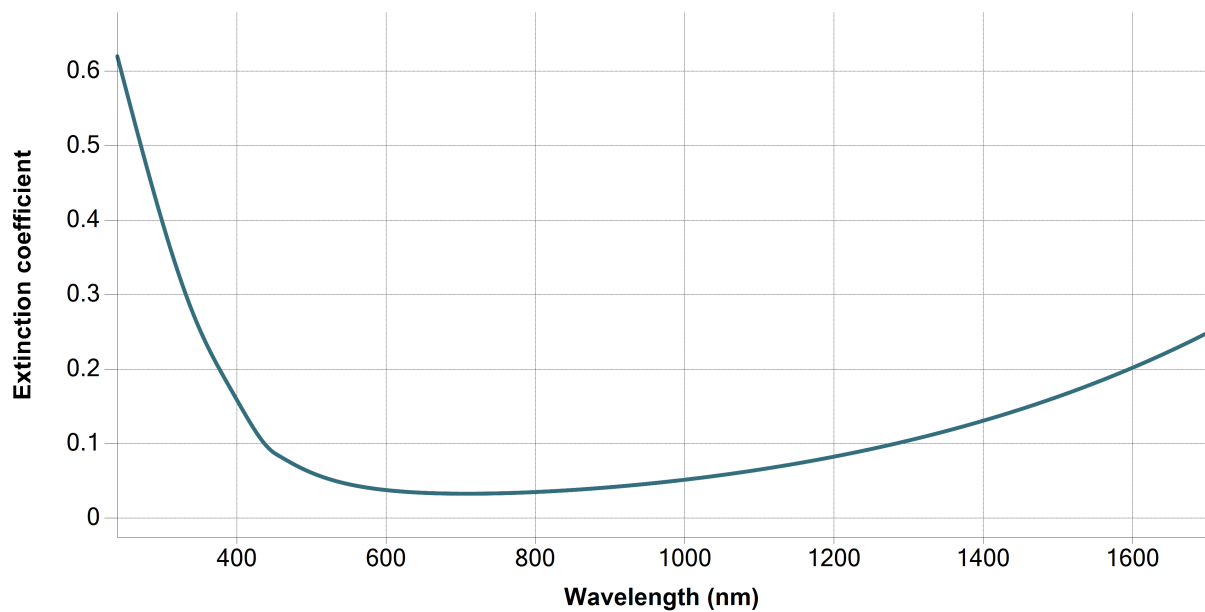
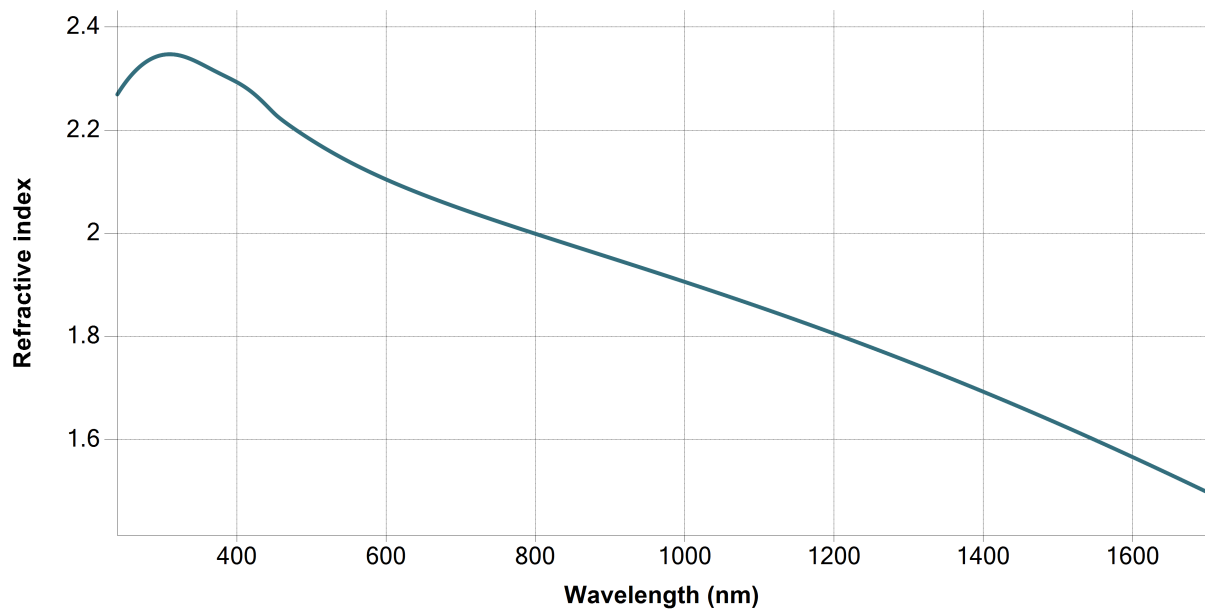
Regression graphs



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 _f (eV)	Ph1 - Lorentz[3] - f	Ph1 - Lorentz[3] - E0 (eV)	Ph1 - Lorentz[3] - Γ (eV)
Ph2 - ITO + void - Thickness	1	-0.7077	-0.2667	-0.0328	-0.1181	0.0144	-0.1627
Ph1 - ITO - Thickness		1	0.5791	0.2497	-0.2827	-0.3743	0.0165
Ph1 - Drude[2] - E _p (eV)			1	0.1721	0.0767	-0.1143	0.0968
Ph1 - Drude[2] - E _f (eV)				1	-0.4837	-0.2562	-0.3681
Ph1 - Lorentz[3] - f					1	0.6765	0.7105
Ph1 - Lorentz[3] - E0 (eV)						1	0.6014
Ph1 - Lorentz[3] - Γ (eV)							1