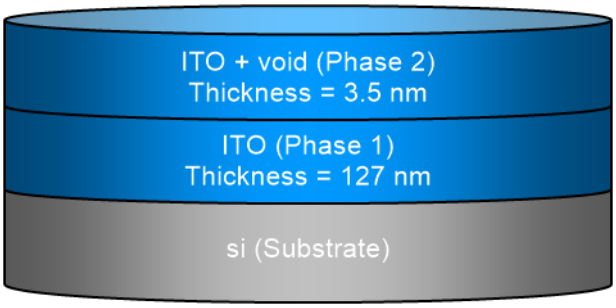
SEA regression report summary

Sample ID
001a 70° 2

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 14:15
Comments	

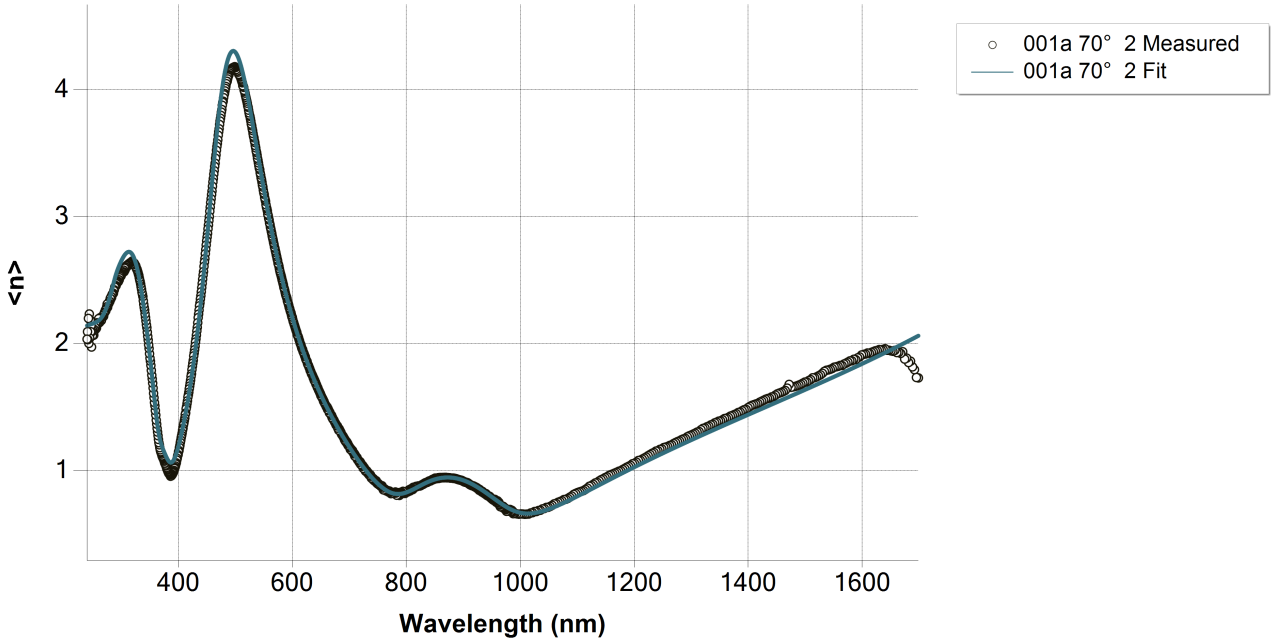
Layer structure	
Overview	
	
Optical model	
Phase 2	ITO + void
Diffusion	
Phase 1	ITO
Dispersion law	Tauc-Lorentz
	Drude

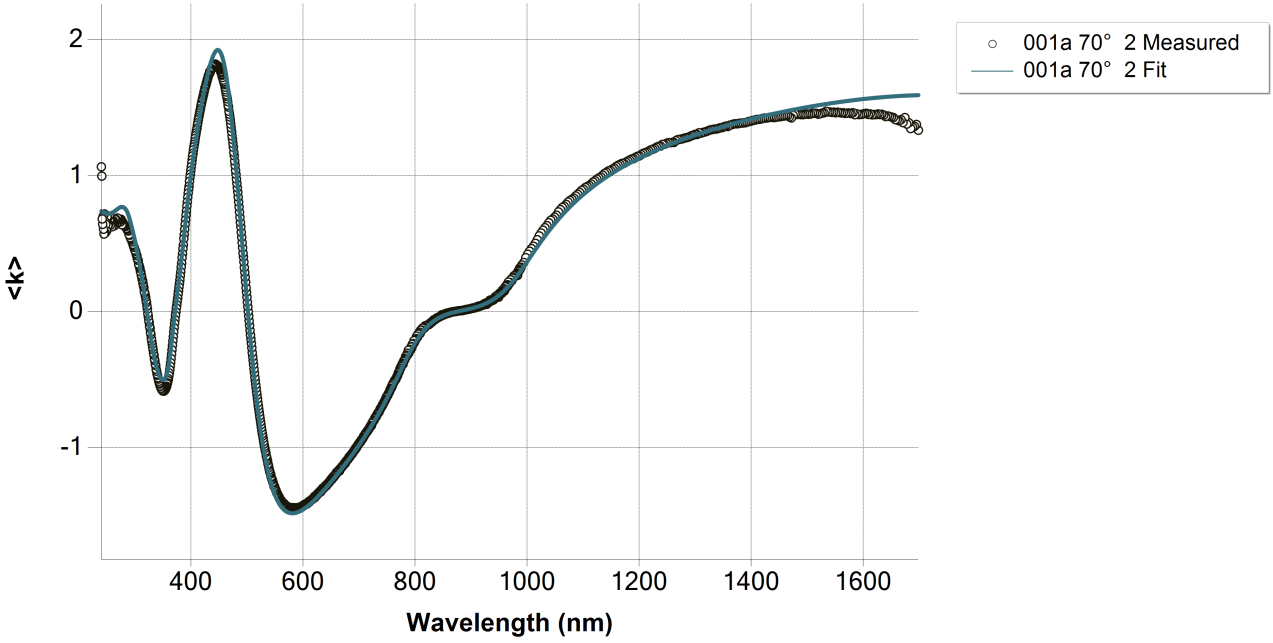
Regression results

Measurement information				
Measurement file path	C:\Users\emmabat\ito-si\001a.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	3.498	X	0.14951	nm
Depolarization coefficient	0.33333			
Concentration 1	0.5			
Concentration 2	0.5			
Phase 1 (ITO)				
Thickness	126.954	X	0.2289	nm
A (eV)	266.29042	X	19.37881	eV
E0 (eV)	8.83713	X	0.16207	eV
C (eV)	33.75346	X	2.81517	eV
Eg (eV)	2.66186	X	0.013248	eV
E_p (eV)	1.0216	X	0.0074466	eV
E_Γ (eV)	0			eV
Eps_inf	0			
Derived parameters	Value			
Phase 2 (ITO + void)				
n @ 632.8 nm	1.4966			
k @ 632.8 nm	0			
Phase 1 (ITO)				
n @ 632.8 nm	2.0505			
k @ 632.8 nm	0			
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)	∞ ± NaN			S/m
Resistivity (mΩ.cm)	0 ± NaN			mΩ.cm
Resistance (Ω/sq)	0 ± NaN			Ω/sq
N type dopant concentration (at/cm3)	1.8923E+20 ± 2.7586E+18			at/cm3

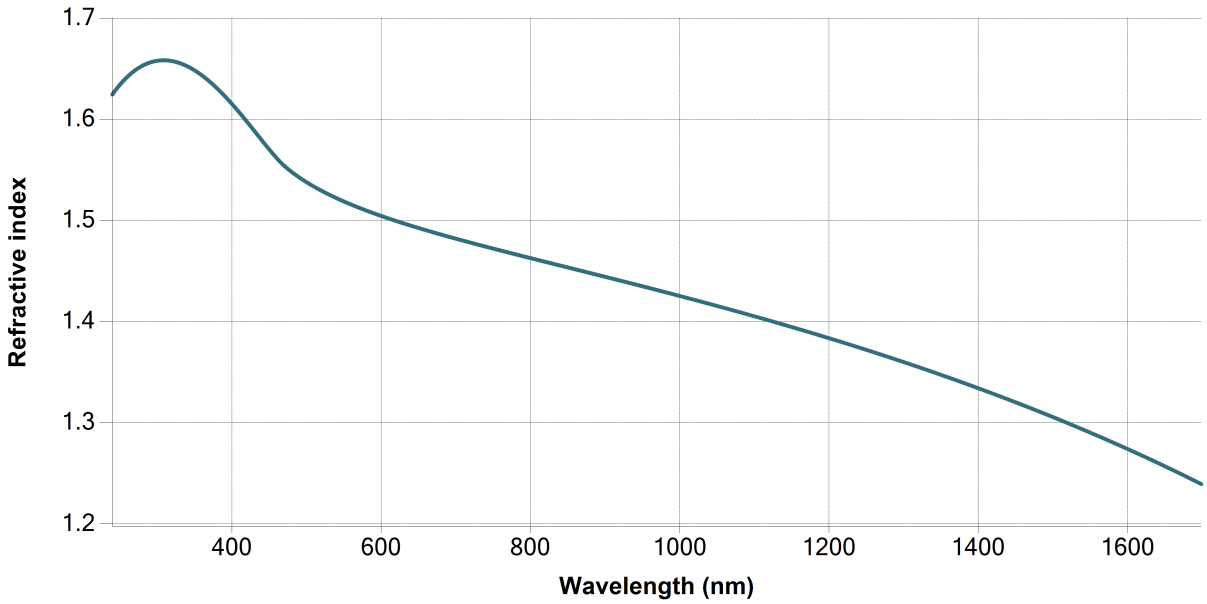
P type dopant concentration (at/cm3)	2.8006E+20 ± 4.0828E+18	at/cm3
N type dopant mobility (cm2/Vs)	∞ ± NaN	cm2/Vs
P type dopant mobility (cm2/Vs)	∞ ± NaN	cm2/Vs
Fit quality		
R^2	0.99705	
RMSE	0.05166	

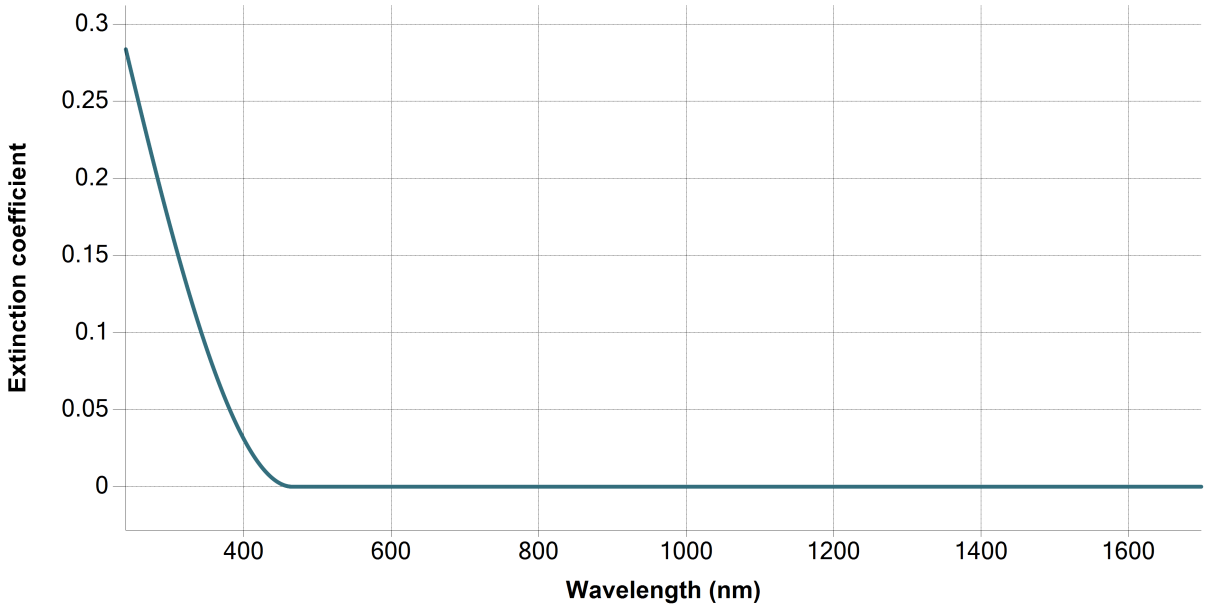
Regression graphs



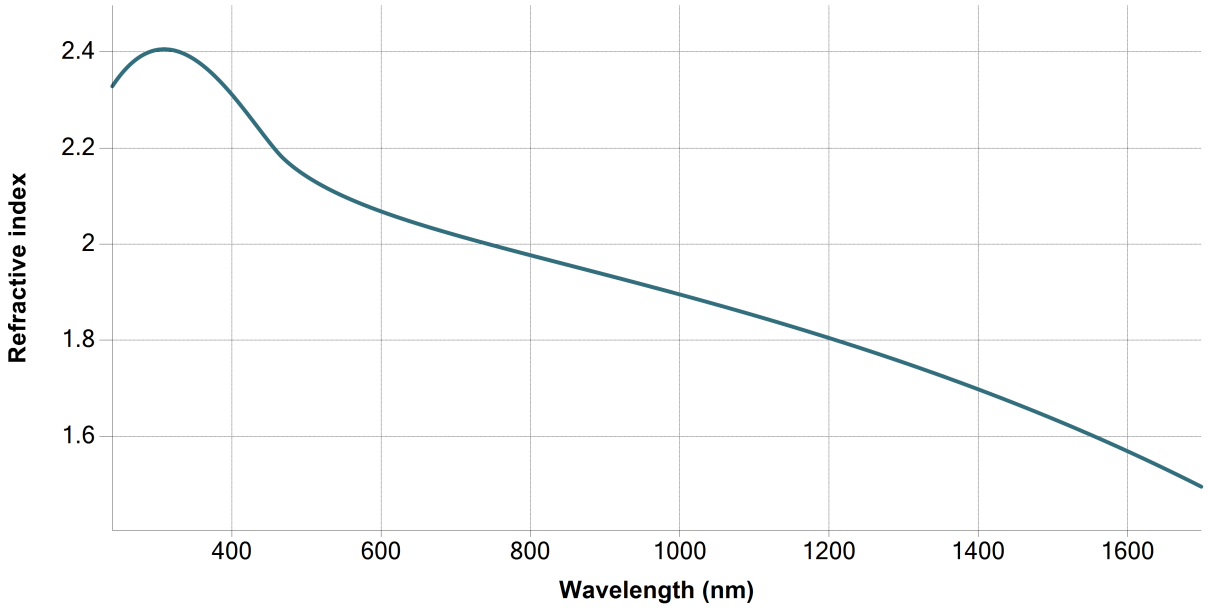


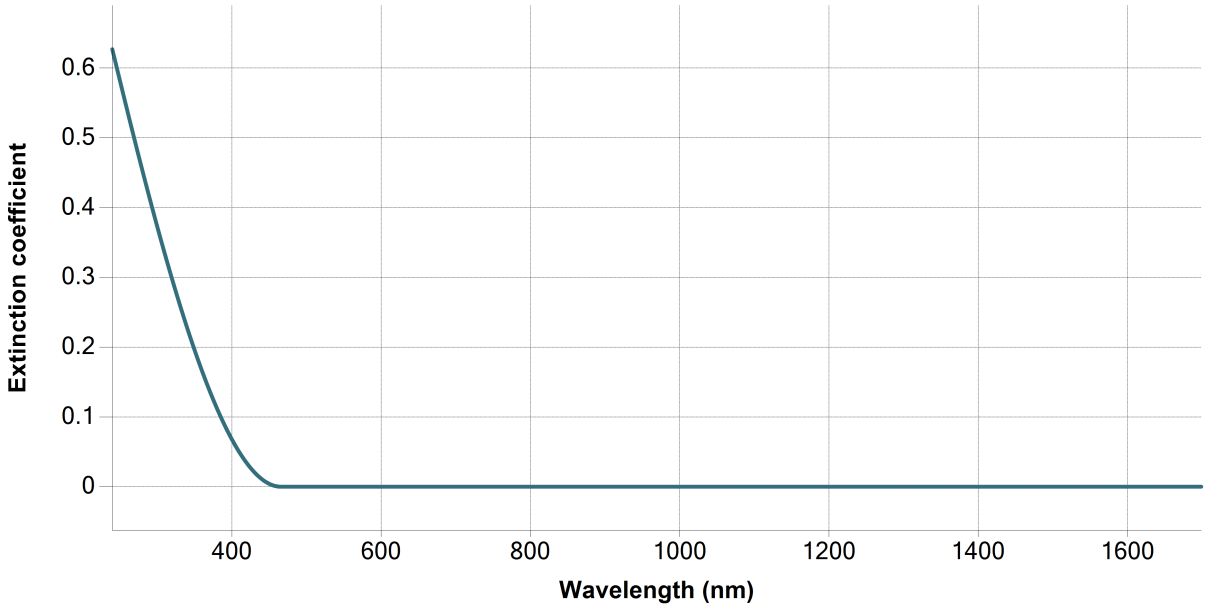
Phase 2 (ITO + void) - Dispersion graphs



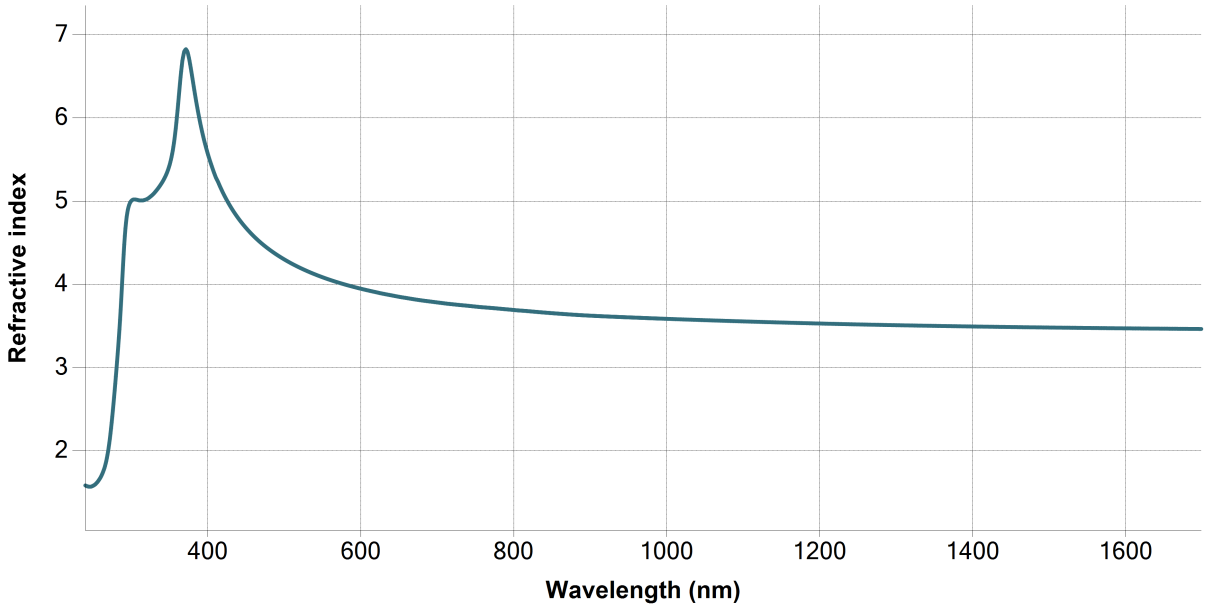


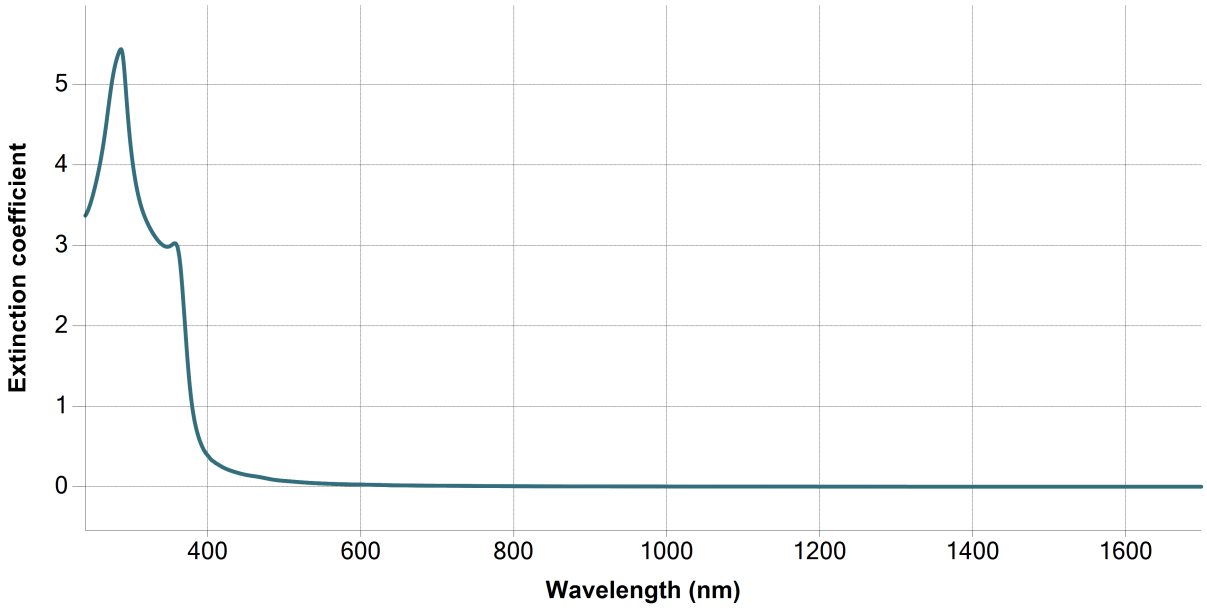
Phase 1 (ITO) - Dispersion graphs





Substrate (si) - Dispersion graphs





Correlation coefficients							
	Ph2 - ITO + void - Thickness	Ph1 - ITO - Thickness	Ph1 - Tauc-Lorentz[1] - A (eV)	Ph1 - Tauc-Lorentz[1] - E0 (eV)	Ph1 - Tauc-Lorentz[1] - C (eV)	Ph1 - Tauc-Lorentz[1] - Eg (eV)	Ph1 - Drude[2] - E_p (eV)
Ph2 - ITO + void - Thickness	1	-0.4334	-0.1027	0.0807	-0.0956	-0.0141	-0.0877
Ph1 - ITO - Thickness		1	0.0206	0.0138	0.0598	0.0237	-0.3031
Ph1 - Tauc-Lorentz[1] - A (eV)			1	-0.3601	0.962	0.8777	0.4371
Ph1 - Tauc-Lorentz[1] - E0 (eV)				1	-0.0964	-0.6304	0.1448
Ph1 - Tauc-Lorentz[1] - C (eV)					1	0.7427	0.482
Ph1 - Tauc-Lorentz[1] - Eg (eV)						1	0.3019
Ph1 - Drude[2] - E_p (eV)							1