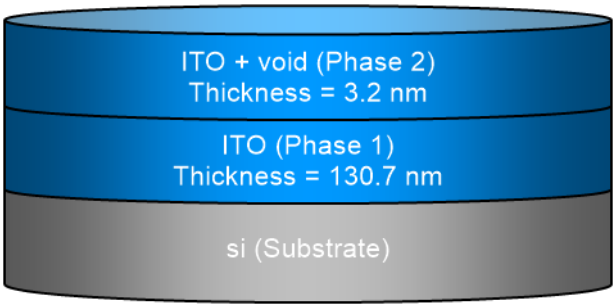
SEA regression report summary

Sample ID
001e 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 14:18
Comments	

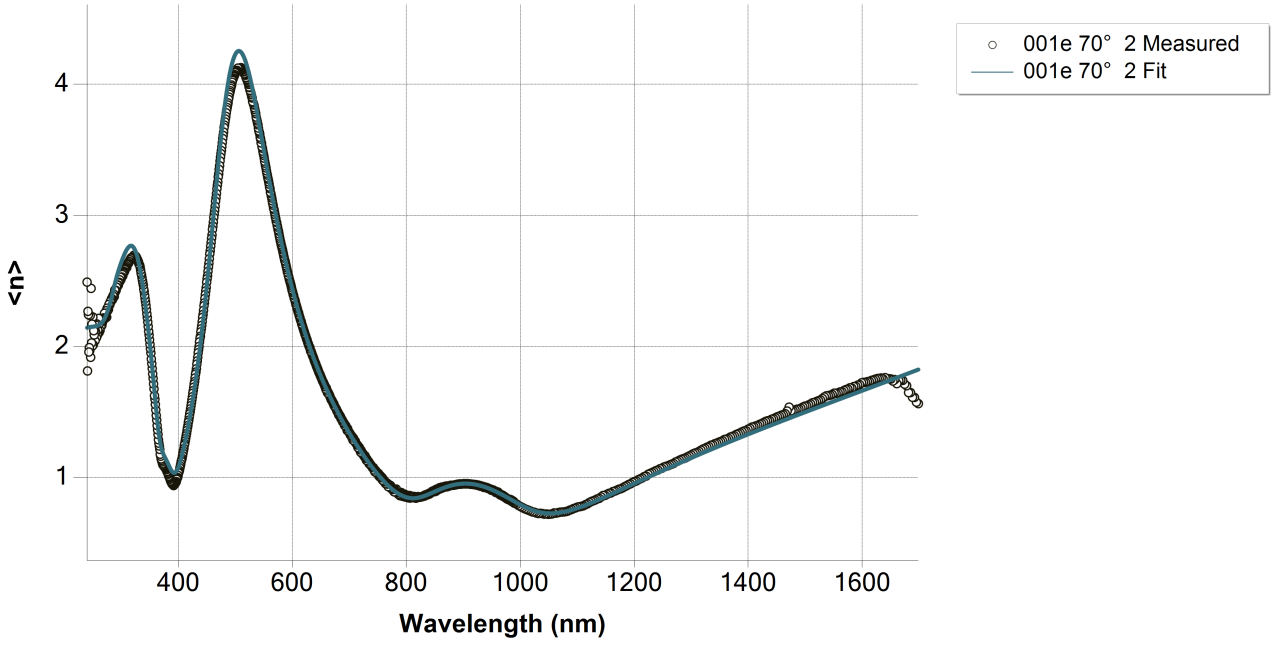
Layer structure	
Overview	
	
Optical model	
Phase 2	ITO + void
Diffusion	
Phase 1	ITO
Dispersion law	Tauc-Lorentz
	Drude

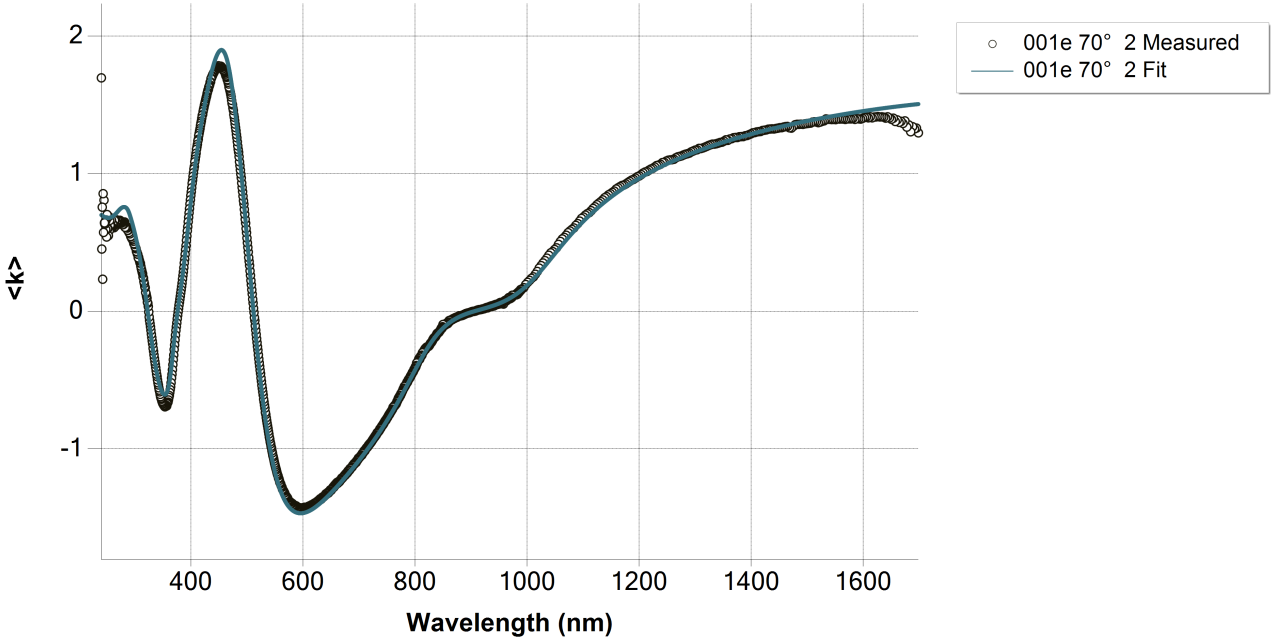
Regression results

Measurement information				
Measurement file path	C:\Users\emmabat\ito-si\001e.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	3.24	X	0.16231	nm
Depolarization coefficient	0.33333			
Concentration 1	0.5			
Concentration 2	0.5			
Phase 1 (ITO)				
Thickness	130.664	X	0.25788	nm
A (eV)	268.77642	X	22.099	eV
E0 (eV)	9.80015	X	0.19401	eV
C (eV)	39.49193	X	4.17398	eV
Eg (eV)	2.63904	X	0.014828	eV
E_p (eV)	0.89118	X	0.010186	eV
E_Γ (eV)	0			eV
Eps_inf	0			
Derived parameters	Value			
Phase 2 (ITO + void)				
n @ 632.8 nm	1.4991			
k @ 632.8 nm	0			
Phase 1 (ITO)				
n @ 632.8 nm	2.056			
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)	1.44E+20 ± 3.2918E+18			at/cm3

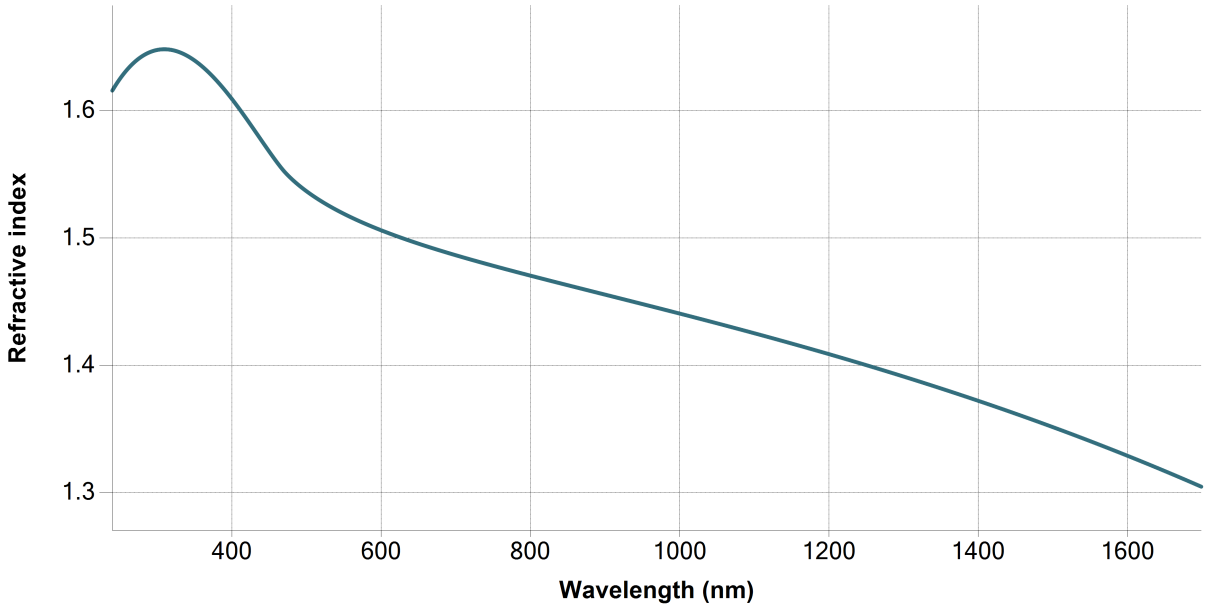
P type dopant concentration (at/cm3)	2.1312E+20 ± 4.8719E+18	at/cm3
N type dopant mobility (cm2/Vs)	∞ ± NaN	cm2/Vs
P type dopant mobility (cm2/Vs)	∞ ± NaN	cm2/Vs
Fit quality		
R^2	0.99649	
RMSE	0.05559	

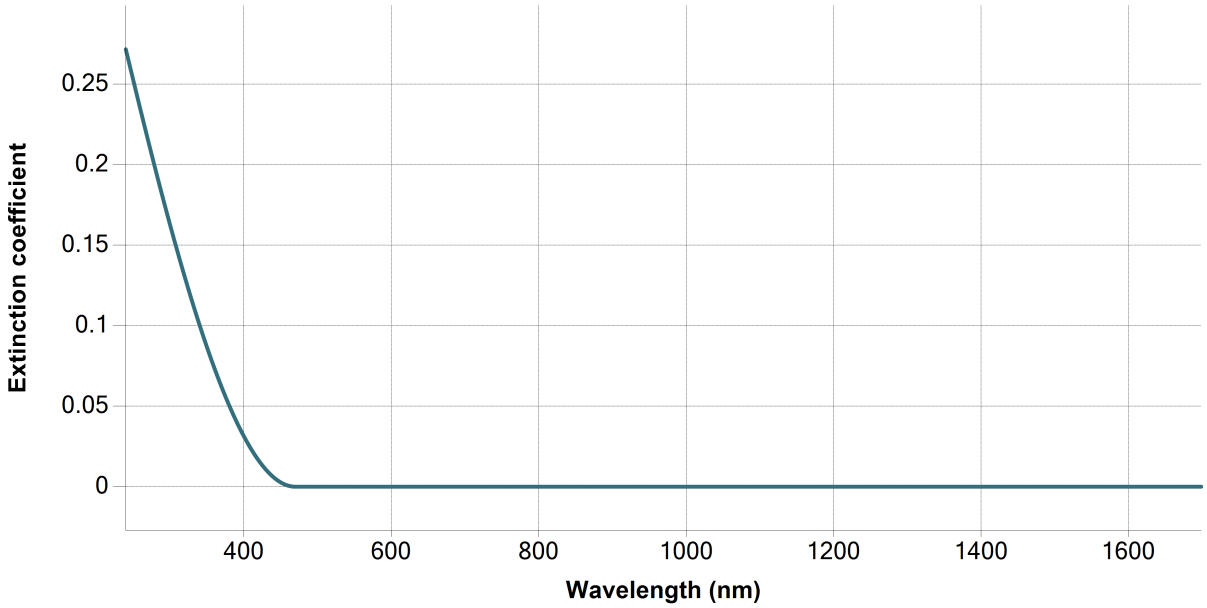
Regression graphs



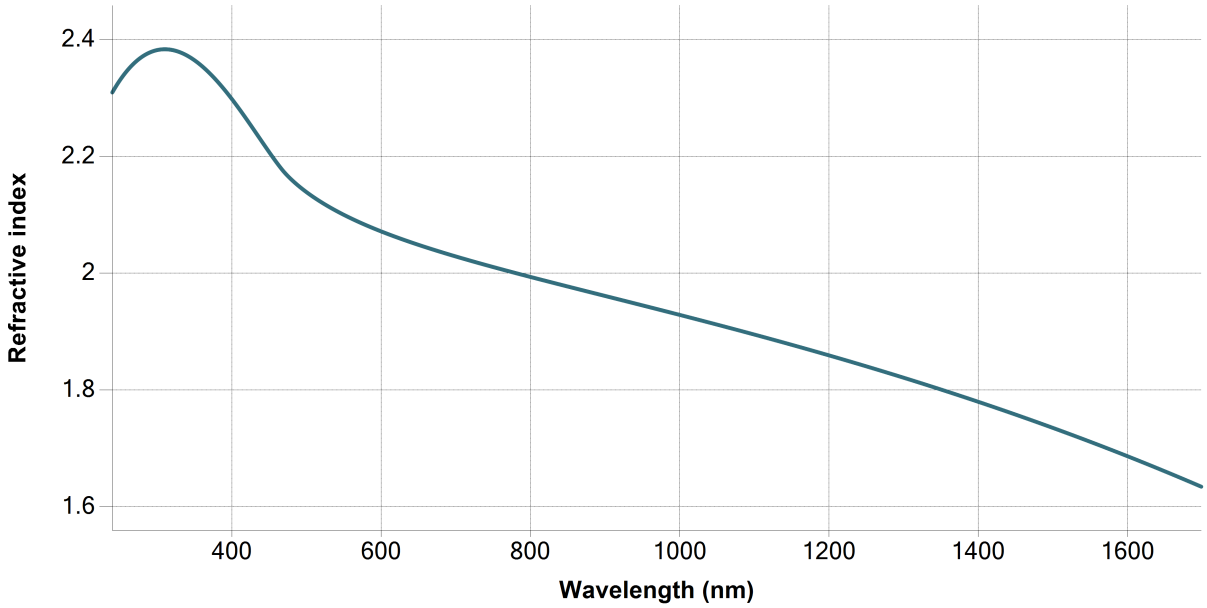


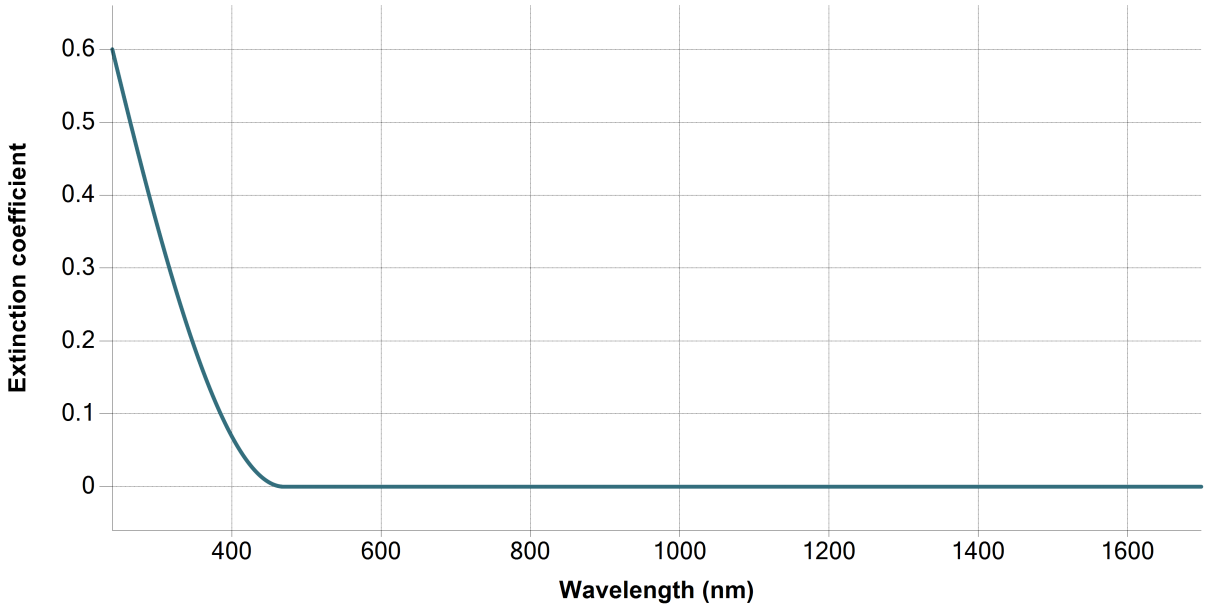
Phase 2 (ITO + void) - Dispersion graphs



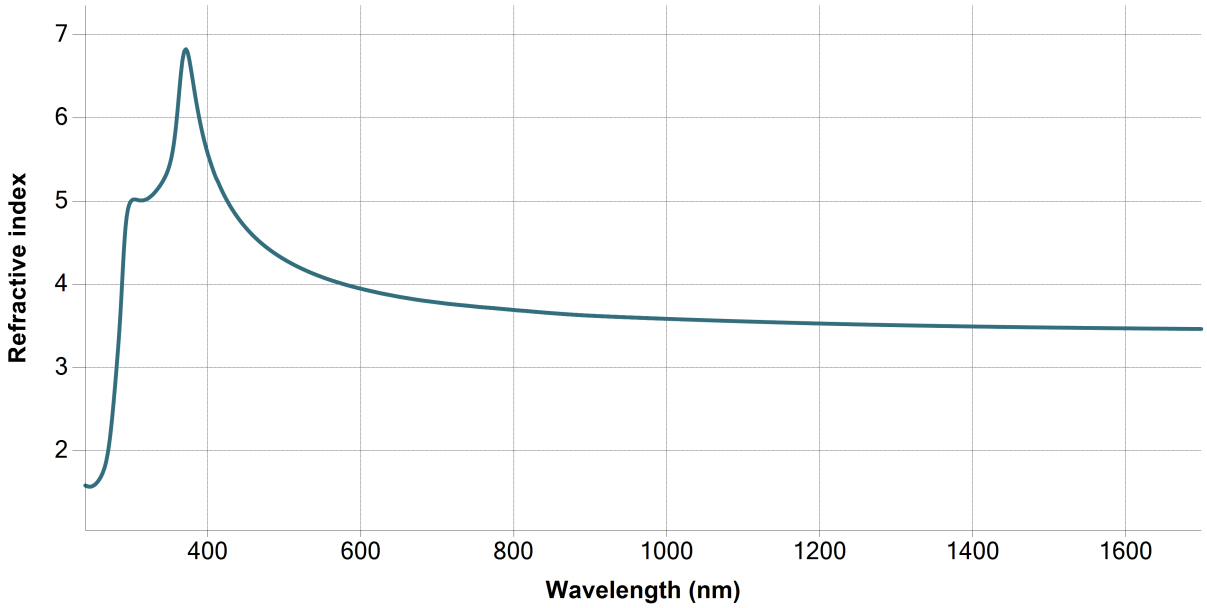


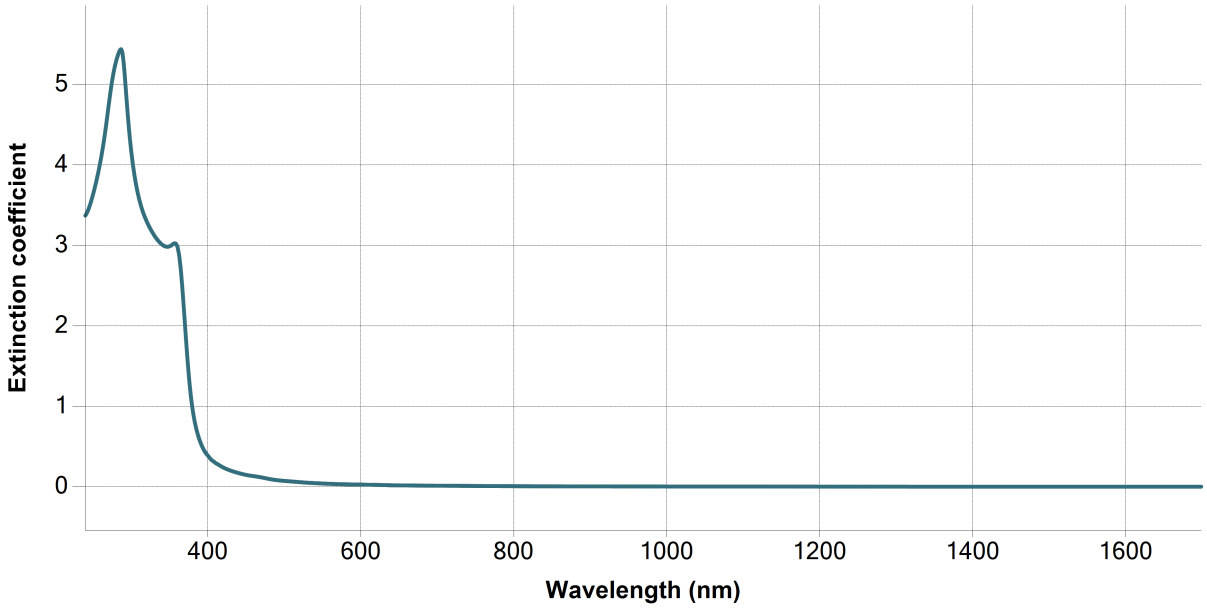
Phase 1 (ITO) - Dispersion graphs





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	-0.4188	-0.1092	0.0075	-0.1065	-0.0241	-0.1016
Ph1 - ITO - Thickness		1	-0.0052	0.0226	0.0299	0.0063	-0.3049
Ph1 - Tauc-Lorentz[1] - A (eV)			1	0.193	0.9727	0.8757	0.4595
Ph1 - Tauc-Lorentz[1] - E0 (eV)				1	0.4113	-0.1832	0.4069
Ph1 - Tauc-Lorentz[1] - C (eV)					1	0.7617	0.4996
Ph1 - Tauc-Lorentz[1] - Eg (eV)						1	0.3071
Ph1 - Drude[2] - E_p (eV)							1