

# nkd-7000

## UV-VIS-NIR Spectrophotometer

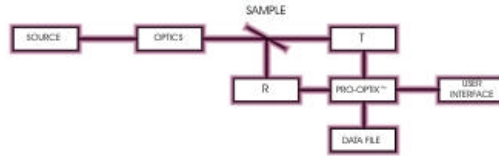
### Advanced Thin Film Characterisation

<b>Spectral range</b>	nkd-7000 350nm – 1000nm (standard model) nkd-7000v 280nm – 1000nm (UV enhanced model) nkd-7000r 800nm - 1700nm (infrared model) nkd-7000w 350nm – 1700nm (wide spectrum model*) nkd-7000e 350nm – 2500nm (extra wide spectrum model*) *wide spectrum model is supplied with two detectors covering 350nm to 1000nm and 800nm to 1700nm or 2500nm for nkd-7000e, which cannot be used simultaneously		
<b>Data acquisition time</b>	2 to 10 minutes depending on range and options selected		
<b>Data analysis time</b>	5 seconds to 5 minutes depending on complexity		
<b>Spectral resolution</b>	1 or 2nm (selectable)		
<b>Light source</b>	<b>nkd-7000v</b>	150W Xenon arc lamp	
	<b>Others</b>	High stability 100W quartz tungsten halogen lamp	
<b>Sample size</b>	10x10mm to 200x250mm standard system Up to 100mm diameter for X-Y mapping stage		
<b>Layers</b>	Up to 5 layers with 2 unknown parameters		
<b>Film thickness range</b>	10nm to 20µm depending on angle, polarization and wavelength		
<b>Substrates</b>	Transparent, opaque or semi-absorbing. Up to 7mm thick		
<b>Materials</b>	Dielectrics, polymers, semiconductors and metals		
<b>Accuracy</b>	<b>For semi-absorbing film</b>	<b>Typical</b>	<b>Maximum</b>
	Film thickness	< 1%	< 3%
	Refractive index	< 0.1%	< 1%
	Extinction coefficient	< 1%	< 3%
	<b>For metallic film</b>		
	Film thickness	< 1%	< 3%
	Refractive index	< 1%	< 3%
	Extinction coefficient	< 1%	< 3%
<b>Repeatability</b>	Transmittance	< 0.01%	< 0.1%
	Reflectance	< 0.01%	< 1%
	Refractive index	< 0.01%	< 0.1%
<b>Incident beam angle</b>	Single angle : 30 (standard unit), 50 or 70 degrees or any customer specified angle.		
<b>Spot size at sample</b>	5mm (standard system), 200µm option		
<b>Power</b>	220V, 50Hz, 2A or 110V, 60Hz, 3A		
<b>Overall dimensions</b>	890 x 540 x 720 mm		
<b>Weight</b>	105Kg		
<b>Options and accessories</b>	X-Y sample mapping platform, various standard size sample inserts Manual or fully software controlled polarisation selection (s- or p-polarisation) Heated sample chuck, sample viewing microscope.		



## Complete Thin Film Measurement

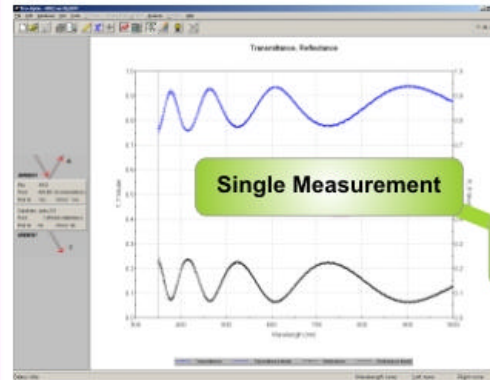
The nkd-7000 has been designed specifically for analysis of thin-film coatings and offers accurate measurement of total transmittance and total reflectance in a precisely defined geometry with known polarisation. This is used to powerful advantage by the integrated analysis software which can determine the thickness and complex refractive index of a coating from the measured data.



## Key Features

- < Measurement of Transmittance & Reflectance spectra from 280 to 2300nm
- < Simultaneous measurement of T & R from same area
- < Precise unambiguous determination of refractive index (n), absorption coefficient (k) and layer thickness (d)
- < Sample mapping with X Y platform - option
- < Range of angles 30, 45, 60, 70 or any user defined fixed angle.
- < Measurement of T & R using s-, p- or unpolarised incident light
- < Measurement of transparent substrates and no sample preparation required.
- < Inbuilt materials database
- < Environmentally sealed sample chamber
- < Selection of Dispersion models
- < Online & offline analysis capability

## Simultaneous T & R measurement

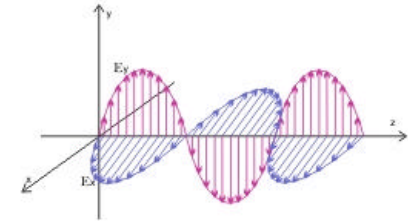


The nkd-7000 measures transmittance and reflectance spectra simultaneously from exactly the same spot, ensuring direct correlation between the two sets of data. Fully automatic control and analysis software then determines n, k and d from the measured spectra. All from one measurement! A selection of dispersion models provide analysis for a wide range of materials and users may choose from default or advanced analysis modes.

Automatic Analysis

## Selectable Incident Polarisation

Precise and unambiguous multilayer film and substrate analysis is guaranteed with the nkd-7000 by providing as much spectroscopic information about the sample as possible. Incident light polarisation (s-, p- or unpolarised), can be selected using the manual or computer controlled polarisation option. S- and P- spectra for T and R can be analysed separately or combined using the merger tool in the software for use in the analysis.



## Accessories for Applications



The nkd-7000 boasts unparalleled versatility with a range of accessories to suit virtually any application.

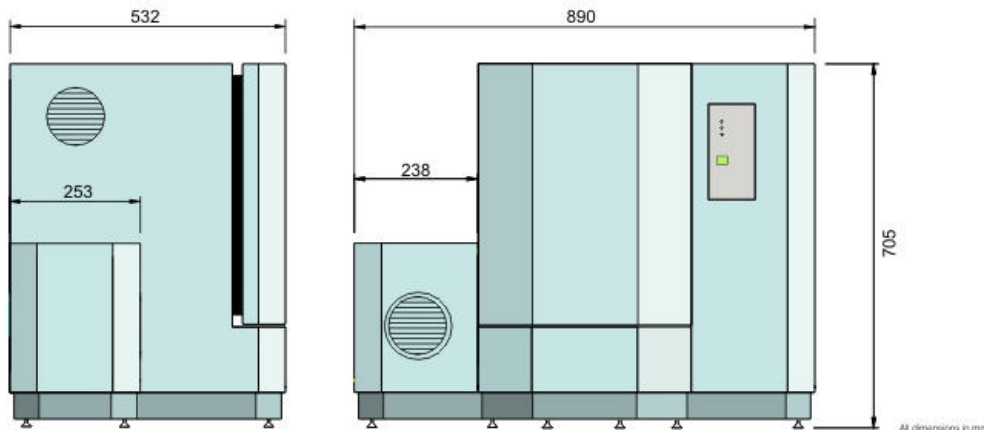
A heated sample chuck fits neatly onto the X Y platform or the standard workpiece, providing T and R measurements for temperatures up to 150 degrees C and is useful for determining spectral shift of optics and optical coatings.

A sample viewing microscope/camera is available and gives a magnified image of the sample for alignment of small features to the beam axis.

The microspot accessory can be used to focus the beam down to 200µm, and is particularly useful for characterising small samples or areas not selectable with the standard beam size of 5mm.

Various sample inserts are also available for convenient sample mounting and can be supplied in standard sizes or custom designed.

## Dimensions



## Sample Mapping

Mapping of n, k and d of large samples is provided for with the optional X Y platform. This accurate X Y translation stage provides 100mm travel in both directions whilst maintaining a clear aperture through the centre of travel for simultaneous measurement of T and R. Full PC control makes this an easy to use feature and a powerful metrology tool. It has been designed to accommodate our range of standard and custom designed samples holders. Motorised control of z is provided as standard.

- ① Reflectance detector
- ② Beam tube
- ③ Y axis
- ④ Transmittance detector
- ⑤ Z axis
- ⑥ X axis
- ⑦ Sample platform
- ⑧ Manual polarisation selector

