최신 버전 주요 사양

Try Alternate Paths

Refinement에서 지정된 한 방식으로만 하는 것이 아니라 최적화를 위한 다른 방법도 찾아 수행 하는 기능.

File	Edit	Parameters	Performance	Lock/Link	Tools	Options	Windo
1	i 🖬 🖬	Perform	ance		🖻 隆 🕅	🗐 🌾	🍓 💊 🗸
b 21	Lavor	Refinem	ent 🔸	🧿 Targe	ts		2
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Refere	ence Wa	velength (nm)	600.00	- SP Simu	lated Ann	ealing	
ΓT			Petractive	Dia Ouasi	Newton	alem	~
	Layer	Material	Index	hip Need	le Synthes	sis	
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Ger	neral —						93.54
		Number	of Iterations: 📊	00	0	<	77.04
		Minimum Me	rit Eunction		Refi	ne	107 /0
In	nprove	ment To Upd	ate Plot (%): 25				
		Recy	cle Interval: 0		Can	cel	
		Try Altern	ate Paths 🛛 🔽				
_ Thi	ckness	es					
		Refine TI	hicknesses 🔽				
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	ex						
		Re	fine Index 🔲				
	S	tarting Densit	y Increment: 0.1	1			
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Lir	miting F	Range For Me	erit Function: 0.0	01			
	Use	Custom Meri	Function				
So	ource F	ile:					
			Brow	vse			

Edge Filter 물질 Data 범위 확대

File Edit Pa	rameters Perform	ance Lock	/Link 1	Tools	Options	Window	Help												
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► Design3				Re	fine			•											
<u>D</u> esign <u>C</u>	ontext <u>N</u> otes			t Co	ompact Desi	ign													
Incident Angl	e (deg) 0.00 (avelength (nm) 510.0	i0		Ar	nalysis			•											
Inelelence w	avelengin (nin) 510.0			De	esign Tools			•		Edg	e Filt	er							
Layer	Material	Refractive Index	Extin Coeffi	ine Th	dex Profile ickness Prof	file				Her Indu	pin uced	Tran	smiss	ion	Filter	Desid	an		
▶ Mediu	m Air	1.00000	0.1	Se	ensitivity			•		Sym	nmet	rical	Perio	ds					
Substra	te Glass	1.35000	0.1		1.751.014	o e el				<i>.</i>	-	-	-	-	-	-	-	-	1

🐎 Edge Filter De	sign	×
Shortwave Pass Fi Longwave Pass Fi	lter: O	Make Edge Filter
Edge Wavelength	(nm) 510.00	Cancel
Incident Med	ium: Air 💌	
Incident Angle (deg) 45.00	
Materi	al A:	
Materi	al B:	
Number of Peri	ods: 1	
Lower Search L	.imit: 0.10	
Upper Search L	.imit: 1.00	
Search Inte	erval 0.05	

Various plot parameters

보강된 Plot data

	Pa	ramet	ers Pe	rformance	Lock/L	ink T	ools	Option	ns N	Window	Help				
5	þ	Perf	ormance	·	° -		22 注注	II (†	5 🏟	♣ -	≬.	0	\$Þ	[þ	Sp
	¢	Refin 3D I Yield	nement Performa d Specifi	Ance cation											
		<mark>⊨</mark> ⊷ <u>D</u> e:	21-Layer sign <u>C</u>	· Longwave Pa ontext) <u>N</u> otes	iss Filte	r							×		
l		Inci Ref	ident Ang ference W	le (deg) /avelength (nm)	0.00)									
			Layer	Material	F	Refractiv Index	e Ex Co	tinction		Optical hickness FWOT)	Physi Thickr (nm	cal ness 1)	^		
			Medium	Air		1.000	000	0.0000	0						
			1	Ti02		2.291	75	0.0000	10 0.	12500000		32.73			

► Performance Par	ameters			
- Horizontal Axis 📔 V	ertical Axis	2nd Vertical A	xis	
Wavelength (nm) Wavelength (nm) Wavenumber (cm-1) Incident Angle (deg) Layer Thickness (Op Layer Thickness (nm Layer Thickness (Ge Interval for Plot 100	▼ tical)) ometric)			
Derformance Parameters				×
Horizontal Axis Vertical Axis Transmittance Magnitude (%) Transmittance Magnitude (%) Reflectance Magnitude (%) Transmittance Phase (deg) Reflectance Phase (deg) Back Reflectance Phase (deg) Back Reflectance (%) Density log(Transmittance) (dB) Polarization P V S Mean	2nd Vertical Axis) Add to Label Context: Derivative Incident Angle (deg) Wavelength (nm) Temperature Offset (deg C):	Plot Targets Normal ▼ 0 0 510 0 Linuxran Phase	Add to Label Add to Label Add to Label Add to Label Add to Label	<u>D</u> K <u>Plot</u> Plot O <u>v</u> er <u>A</u> ctive Plot <u>I</u> able <u>C</u> ancel

복수의 Active Plot

Active Plot을 다른 조건으로 복수의 Plot이 가능



Spectral data & Measurement conditions 바로 입력으로 광학 상수 자동 산출

The Optical Constants tool now includes a directed data entry and automatic parameter extraction. When a new Optical Constants is started, you will be directed to enter the files containing the spectral data and provide information on the measurement conditions.

After this data has been provided, the tool will attempt to automatically extract the optical constants. The best result will be displayed. Alternative results are also available for review. Once the process has completed, the Optical Constants data can be edited in the usual way.



Massurement Conditions		
Measurement Conditions		
This tool derives optical constants for dielectric materials. fringes.	The spectrometer measurements must	show interference
Enter the measurement conditions on this page. On the ne imported. Either transmitance data or reflectance data mus	ext two pages transmittance and reflect st be present for optical constant extrac	tance data can be ction
Incident Angle (deg)		
Polarization:		
Tolerance (%) 0.5		
1		
Cancel	Back	Next

	Constants		×
	Import Transmittance		~
ran			
	Scale Bange (Magnitude)		
	Choose Data 0 0 - 1 0 0 - 100%		Remove Data
	Consel	Paak	Neut
		Dack	Nex
	Optical Constants		×
	Import Reflectance		
	- Scale Pance (Machinde)		
	Choose Data C 0-1 C 0-100%	□ Single Sided Reflectance	Remove Data
	Cancel	Back	Next
		1	
	🕎 Optical Constants		× -
	Substrate		
	Either a material from the database or measurements of the uncoated su substrate data. Select a material from the dropdown list or check Use Sp	ostrate can be used to provide ectrum to add measurements,	the then click on
	Next.		
	The substrate will be assumed to be transparent if only transmittance dat	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum 🗖	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum Smooth Spectrum	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum Smooth Spectrum Material: Air	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum Smooth Spectrum Material: Air Thickness (mm) 1.0	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum Smooth Spectrum Material: Air Thickness (mm) 1.0	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum Smooth Spectrum Material: Air Thickness (mm) 1.0	a or only reflectance data are	provided.
	The substrate will be assumed to be transparent if only transmittance dat Use Spectrum Smooth Spectrum Material: Air Thickness (mm) 1.0	a or only reflectance data are	provided.

디지크라식_www.thinfilm.co.kr_ 무단 복사 사용 금지

Thickness Profile

Design (in the Tools menu).

File E	dit Pa	rameters Perfo	rmance Lo	ock/Link	Too	Is Options	Window	Help	
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.	21 Laver	Longwave Pass P	ilter			Refine			
De	eign) C	ontext) Notes)			÷	Compact De	sign		
De	sign D	ontext Motes				Analysis	2	3	
Inc	ident Angl	e (deg) 0.0	00			De la Tel	2		
Re	terence W	avelength (nm) 60	0.00			Design 100	5	3	·
			Befractive	Extinctio		Index Profile			-
	Layer	Material	Index	Coefficie		Thickness Pr	ofile		
	Medium	Air	1.00000	0.000		Sensitivity		0	•
	1	Ti02	2.29175	0.000					
	2	Si02	1.45808	0.000		Load ZEMAX	Coating File.	***	- 11
	3	Ti02	2.29175	0.000		C. h.			
	4	Si02	1.45808	0.000		Substrate n,	(& I		
	5	Ti02	2.29175	0.000		DWDM Acci	stant		
	6	Si02	1.45808	0.000		DWDIVI ASSI	stant		
	7	Ti02	2.29175	0.000		Corinte			
	8	Si02	1.45808	0.000		scripts			
	9	Ti02	2.29175	0.0000	0 0	0.25000000	65.45		
		0.00	1 45000	0.0000	<u> </u>	0000000	100.00		





Index Profile

Design (in the Tools menu).

E	dit Pa	rameters Pe	rformance Lo	ock/Link	ools Options Window	/ Help
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De:	21 Layer sign Co	Longwave Pa	ss Filter	4	Refine Compact Design	,
Inci	dent And	e (dec)	0.00		Analysis	,
Ref	erence W	avelength (nm)	600.00		Desian Tools	,
			1 1		Index Profile	
	Layer	Material	Refractive Index	Extinctio Coefficie	Thickness Profile	
F	Medium	Air	1.00000	0.000	Sensitivity	,
	1	TiO2	2.29175	0.000	Land TELLIN Contract	1.
	2	SiO2	1.45808	0.000	Load ZEMAX Coating F	lle
	3	TiO2	2.29175	0.000	Substrate p k % T	
	4	Si02	1.45808	0.000	Substrate fi,K & T	
	5	TiO2	2.29175	0.000	DWDM Assistant	
	6	SiO2	1.45808	0.000	Dividin Assistant	
	7	TiO2	2.29175	0.000	Scrints	
	8	SiO2	1.45808	0.000	wentpeare	
	9	TiO2	2.29175	0.00000	0.25000000 65.45	
	10	0.00	1 45000	0.00000	0.05000000 100.00	





Select Materials

Select Materials (Edit menu of Designs)

	i dana kana d	(de -)	0.00	2				-
nc Rai	ident Angi ference W	ie (deg) /avelenath (nm)	600	J LOO				-
-			1000					_
	Layer	Material		Refractive Index	Extinction Coefficient	Optical Thickness (FWOT)	Physical Thickness (nm)	^
	Medium	Air	1	1.00000	0.00000	121		
	1	TiO2	_	2.29175	0.00000	0.12500000	32.73	
•	2	SiO2	-	1.45808	0.00000	0.25000000	102.88	
	3	TiO2		2.29175	0.00000	0.25000000	65.45	
	4	SiO2		1.45808	0.00000	0.25000000	102.88	
	5	TiO2		2.29175	0.00000	0.25000000	65.45	
	6	SiO2		1.45808	0.00000	0.25000000	102.88	
	7	TiO2		2.29175	0.00000	0.25000000	65.45	
	8	SiO2		1.45808	0.00000	0.25000000	102.88	
	9	TiO2		2.29175	0.00000	0.25000000	65.45	
	10	SiO2		1.45808	0.00000	0.25000000	102.88	
	11	TiO2		2.29175	0.00000	0.25000000	65.45	
	12	SiO2		1.45808	0.00000	0.25000000	102.88	
_	13	TiO2		2 29175	0.00000,	0.25000000	65.45	
						5.00000000	1683.27	V

해당 Materials line을 선택

File	Edit	Parameters	Perfo	ormance
⊇ ž	K)	Undo	Ctrl+Z	24
	04	Redo	Ctrl+Y	
	*	Cut Layers Copy Design	Ctrl+X	
	•	Copy Layers	Ctrl+C	
		Copy Thicknes	ises	•
	3	Paste	Ctrl+V	
		Paste Design		
		Paste Thicknes	ses	> _
		Paste Column	S	
		Select Materia	ls	
		Insert Layer		iii F
		Delete Laver		- I

해당 물질이 모두 선택이 됩니다.

Refer	Layer Medium	avelength (nm) Material	600	.00 Refractive	F. C. Mar	Optical	Dhusiaal	
•	Layer Medium	Material		Refractive	E di sti s	Optical	Dissolutional	_
•	Medium			Index	Coefficient	Thickness (FW0T)	Thickness (nm)	^
Þ		Air		1.00000	0.00000			
Þ	1	Ti02		2.29175	0.00000	0.12500000	32.73	
	2	Si02	-	1.45808	0.00000	0.25000000	102.88	
	3	Ti02		2.29175	0.00000	0.25000000	65.45	
	4	Si02		1.45808	0.00000	0.25000000	102.88	
	5	Ti02		2.29175	0.00000	0.25000000	65.45	
	6	Si02	1	1.45808	0.00000	0.25000000	102.88	
	7	Ti02		2.29175	0.00000	0.25000000	65.45	
	8	Si02		1.45808	0.00000	0.25000000	102.88	
	9	Ti02		2.29175	0.00000	0.25000000	65.45	
	10	Si02		1.45808	0.00000	0.25000000	102.88	
	11	Ti02		2.29175	0.00000	0.25000000	65.45	
	12	Si02		1.45808	0.00000	0.25000000	102.88	
	13	TiO2	_	2 29175	0.00000	0.25000000	65.45	



해당 물질 변경 (Edit Materials)

Select new materials materials.	to replace the current	OK
Current Material	New Material	Cancel
Air SiO2	Air Na3AIF6)

D + 1	21 Layer	Longwave Pa	ss Filter				×
De	sign <u>C</u> e	ontext) <u>N</u> otes	ì				
Inci	ident Angl	e (deg)	0.00				_
Ref	ference W	avelength (nm)	600.00				
	Layer	Material	Refractive Index	Extinction Coefficient	Optical Thickness (FWOT)	Physical Thickness (nm)	^
	Medium	Air	1.00000	0.00000			
	1	Ti02	2.29175	0.00000	0.12500000	32.73	
•	2	Na3AlF6	1.35000	0.00000	0.25000000	111.11	
	3	Ti02	2.29175	0.00000	0.25000000	65.45	
	4	Na3AlF6	1.35000	0.00000	0.25000000	111.11	
	5	TiO2	2.29175	0.00000	0.25000000	65.45	
	6	Na3AIF6	1.35000	0.00000	0.25000000	111.11	
	7	Ti02	2.29175	0.00000	0.25000000	65.45	
	8	Na3AlF6	1.35000	0.00000	0.25000000	111.11	
	9	TiO2	2.29175	0.00000	0.25000000	65.45	
	10	Na3AIF6	1.35000	0.00000	0.25000000	111.11	
	11	Ti02	2.29175	0.00000	0.25000000	65.45	
	12	Na3AIF6	1.35000	0.00000	0.25000000	111.11	
	13	TiO2	2 29175	0.00000,	0.25000000	65.45	
					5.00000000	1765.63	Y

SiO2가 선정한 물질로 모두 변경 됩니다.

Context에 empty layer 넣기

21 Layer Longwave	Pass Filter	
<u>D</u> esign <u> Context</u> <u>N</u>	otes	
Normal	✓ Add Delete	
Aqi	le Materials	
Agile Material	Material	
_		
📙 21 Layer Longway	e Pass Filter	
Design <u>C</u> ontext <u>1</u>	lotes	
Context	Add	
INormal	Delete	
Add C	ontext	
Agi Co *	ntext Name test	
Design Contex	wave Pass Filter	
Context		
test	- Add	
Normal test	Delete	
	Agile Materials	1
Agile Mater	al Matenal Air <u> </u>	1
	디지그다즥_www.tninfilm.c 사용 금지	:0.Kr_ 구린 숙작

Table 파일 정렬 하기

Π	1 21 Layer Longwave Pass Filter: Performance								
Ia	ble <u>N</u> otes								
	Design		21 Layer Longwave Pass Filter						
	Reference Wa	velength (nm)	600.00						
1	Incident Angle	(deg)	0.00						
*						_			
	Wavelength (nm)	Reflectance (%)	Transmittance (%)	Reflectance-Phase (deg)	Transmittance-Phase (deg)				
	400	51.871664	44.787088	161.478472	63.124992				
	420	53.210396	44.836890	162.229789	-115.212404				
	440	33.792841	64.645502	149.262548	43.640861				
•	460	9.804523	88.458001	-147.610396	163.522329				
	480	67.678110	31.685918	-166.705384	-72.082112				
	500	80.385092	19.351620	173.477937	81.466548				
	520	86.108335	13.612481	166.942329	-106.958180				
	540	99.765705	0.199319	-164.502298	-70.573057				
	560	99.930281	0.046863	-153.145821	-56.634824				
	580	99.961635	0.028754	-143.117276	-44.713299				
	600	99.968128	0.031872	-132.848260	-32.929406				
	620	99.918757	0.055268	-121.366500	-20.254103				
	640	99.759229	0.141342	-107.531228	-5.681755				
	660	99.242557	0.541960	-89.066338	12.639223	~			

Т	21 Layer Long	gwave Pass Fi	lter: Performan	ce		×
Ial	ble <u>N</u> otes					
	Design		21 Layer Longw	vave Pass Filter		_
	Reference Wa	velength (nm)	600.00			
	Incident Angle	(deg)	0.00			
*		AL 21042				
	Wavelength (nm)	Reflectance (%)	Transmittance (%)	Reflectance-Phase (deg)	Transmittance-Phase (deg)	^
	400	51.871664	44.787088	161.478472	63.124992	
	420	53.210396	44.836890	162.229789	-115.212404	
	440	33.792841	64.645502	149.262548	43.640861	
	460	9.804523	88.458001	-147.610396	163.522329	
	480	67.678110	31.685918	-166.705384	-72.082112	
	500	80.385092	19.351620	173.477937	81.466548	
	520	86.108335	13.612481	166.942329	-106.958180	
	540	99.765705	0.199319	-164.502298	-70.573057	
	560	99.930281	0.046863	-153.145821	-56.634824	
	580	99.961635	0.028754	-143.117276	-44.713299	i e
	600	99.968128	0.031872	-132.848260	-32.929406	
	620	99.918757	0.055268	-121.366500	-20.254103	
	640	99.759229	0.141342	-107.531228	-5.681755	
	660	99.242557	0.541960	-89.066338	12.639223	~

해당 Header 선택



정렬 방식 선정

-	Design		21 Layer Longwave			
	Reference Wa	velength (nm)	600.00			
•	Incident Angle	0.00				
*						
	Wavelength (nm)	Reflectance (%)	Transmittance [%]	Re		
	820	0.451883	99.548117			
	840	0.984538	99.015462			
	800	2.783787	97.216213			
•	760	3.015602	96.701013			
	860	3.083909	96.916091			
	920	3.307402	96.692598			
	940	3.434982	96.565018	ĵ.		
	900	3.792809	96.207191			
	960	3.951663	96.048337			
	780	4.089356	95,789586			
	880	4.110808	95.889192			
	1000	4.245307	95.754693			
	980	4.287673	95.712327			
	720	4.668844	94.428783			

설정대로 정렬되어 보여집니다.

Table 파일 돌려 보기 (Transpose)

종에서

Ia	21 Layer Long ble <u>N</u> otes	gwave Pass Fil	ter: Performan	ce					
► *	Design Reference Wa Incident Angle	avelength (nm) (deg)	21 Layer Longw 600.00 0.00	Jave	Tal	ole	e File이 을	별린 상	태에서
	Wavelength (nm)	Reflectance (%)	Transmittance (%)	Re		Edi C	Tools Option Undo Redo	s Window Ctrl+Z Ctrl+Y	f
•	820 840 800 760 860	0.451883 0.984538 2.783787 3.015602 3.083909	99.548117 99.015462 97.216213 96.701013 96.916091		í I	¥	Cut Columns Copy Table Copy Columns Paste Rows Paste Columns	Ctrl+X Ctrl+C Ctrl+V	-
_	920 940 900 960	3.307402 3.434982 3.792809 3.951663	96.692598 96.565018 96.207191 96.048337				Insert Rows Delete Rows Sort Ascending Sort Descending		= 6 -
	780 880 1000 980	4.089356 4.110808 4.245307 4.287673	95.789586 95.889192 95.754693 95.712327				Transpose Columns Set Independent C	olumn	
	720	4.668844	94.428783				Read Only		
					Transpose	т. 1 с	able contains heade	ers	X
হা ০	이루 변경도	이 보여준	니다		✓ Include	tab	le headers		Cancel

П	21 Layer Longwave Pa	ass Filter: Performan	ce				
Ia	ble <u>N</u> otes						
F	Design Reference Wavelength	21 Layer Longv (nm) 600.00	vave Pass Filter				
•	Incident Angle (deg)	0.00					
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Colum
	Wavelength	820	840	800	760	860	-
	Reflectance	.451883259959115	.984538173160525	2.78378702596389	3.01560178229911	3.0839093363146	3.3074017
	Transmittance	99.5481167400409	99.0154618268395	97.2162129740362	96.7010127038855	96.9160906636855	96.692598
>	Reflectance-Phase	-138.364027481219	155.012704243227	-143.110809176131	79.8990589755237	164.534461904369	-174.91828
	Transmittance-Phase	73.7514905749802	110.279037978791	35.009604319408	-53.795026646407	144.011756713902	-126.49337
*							
1			1	1		1	

Brightness to the color patch

Source:	Incident Angle (deg) Maximum: 0	Plot Table	Close	
Observer: CIE 1964	Minimum: 0	Tristimulus XY 🔹 X Axis Parameter:	a 21 Layer Longwave Pass Filter: Color Patch	
Mode Transmittance	Show White Point	Y Axis Parameter:		
Context:	☐ Absolute Y Level:	Plot		
Normal 💌	Show Targets	Active Plot	_	

Source:	Incident Angle (deg)	Plot Table	c
A 🗾	Maximum: 0	Plot Type:	Llose
)bserver:	Minimum: 0	Tristimulus XY 💌	Cancel
CIE 1964 💌	Interval:	X Axis Parameter:	
/lode		Tristimulus X 🗾 👻	
Transmittance 🛛 💌	Show White Point	Y Axis Parameter:	
olarization:	Show Color Patch	Tristimulus Y 🚽	
P 👱	Absolute	Plot	
Context:	Y Level:		
Normal 💌	Show Targets	Active Plot	Errors >>



Brightness가 반영된 Color Patch