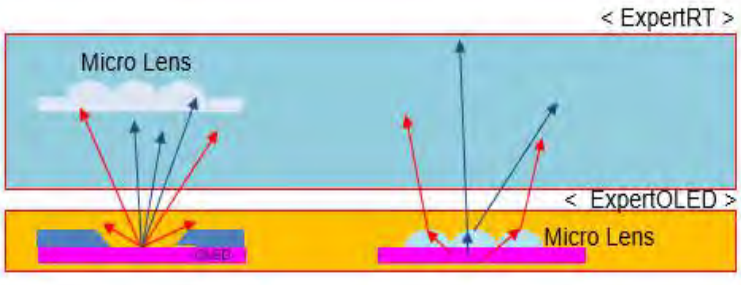
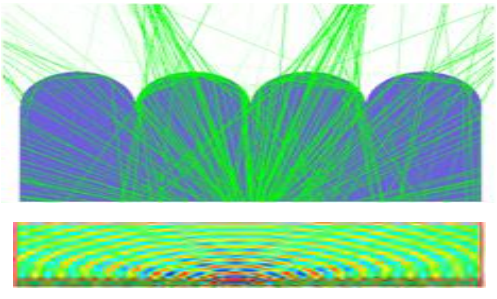
MULTI-DIMENSION SIMULATOR
for OLED with Real Manufacturing Process Implemented

Hybrid Optic Simulation

For panel simulation, the micro and macro optic are necessary in OLED simulation together. To co ver the macro optic instead of FDTD, the ray tracing function is added. With mixing Ray Tracing to FDTD, the panel style simulation is possible.

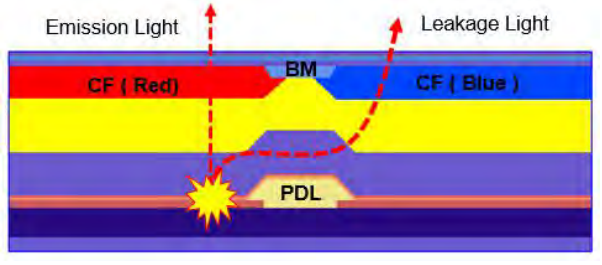




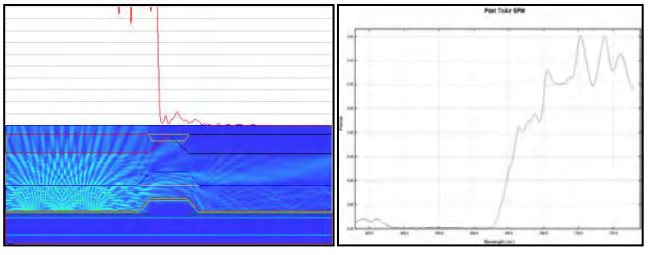
FDTD + Ray trancing Simulation

Light Leakage Prediction & An alysis Solution

In WOLED, the light leakage between pixels is serious problem.
ExpertOLED shows light propagation path i nternally and calculates the amount of powe r of light leakage. With theses information, u ser can find the optimized design for solvin g this failure.



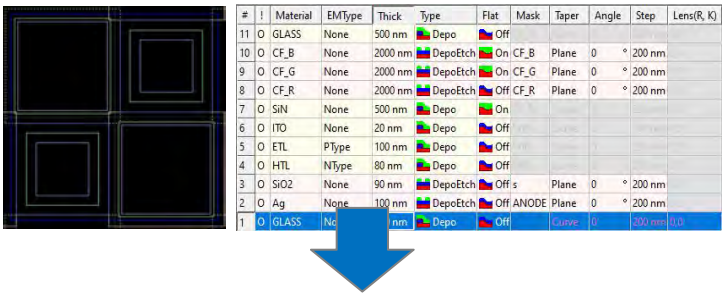
Real Structure in EOLED



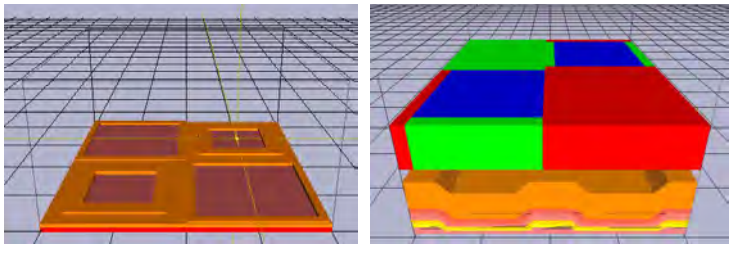
Light Profile | **Wavelength Spectrum**

Easy Structrue generation ba sed on an actual manufacturi ng process.

An easy structure generation with the user-friendly interface emulating a real process. Structure is generated easily using real GD S II mask.



#	!	Material	EMType	Thick	Type	Flat	Mask	Taper	Angle	Step	Lens(R, K)
11	O	GLASS	None	500 nm	Depo	Off					
10	O	CF_B	None	2000 nm	DepoEtch	On	CF_B	Plane	0 °	200 nm	
9	O	CF_G	None	2000 nm	DepoEtch	On	CF_G	Plane	0 °	200 nm	
8	O	CF_R	None	2000 nm	DepoEtch	Off	CF_R	Plane	0 °	200 nm	
7	O	SiN	None	500 nm	Depo	On					
6	O	ITO	None	20 nm	Depo	Off					
5	O	ETL	PType	100 nm	Depo	Off					
4	O	HTL	NType	80 nm	Depo	Off					
3	O	SiO2	None	90 nm	DepoEtch	Off	s	Plane	0 °	200 nm	
2	O	Ag	None	100 nm	DepoEtch	Off	ANODE	Plane	0 °	200 nm	
1	O	GLASS	No	nm	Depo	Off		Curve	0	200 nm	0,0



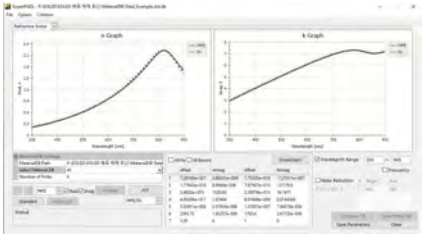
Generated Structure in EOLED from GDS II

WORK PROCESS

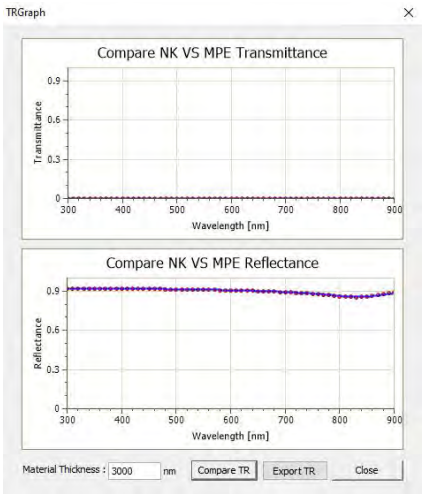
MATERIAL

Fitting

For reducing run time and incr ease accuracy, a Drude-Lorent z Model in Engine is applied. U sers can get accurate result fa st.



Material fitting window

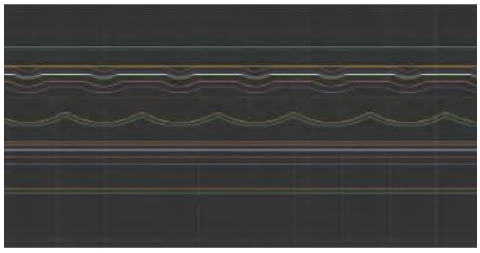


Compre NK vs MPE Transmittance & Reflectance

STRUCTURE

Flexible structure generation

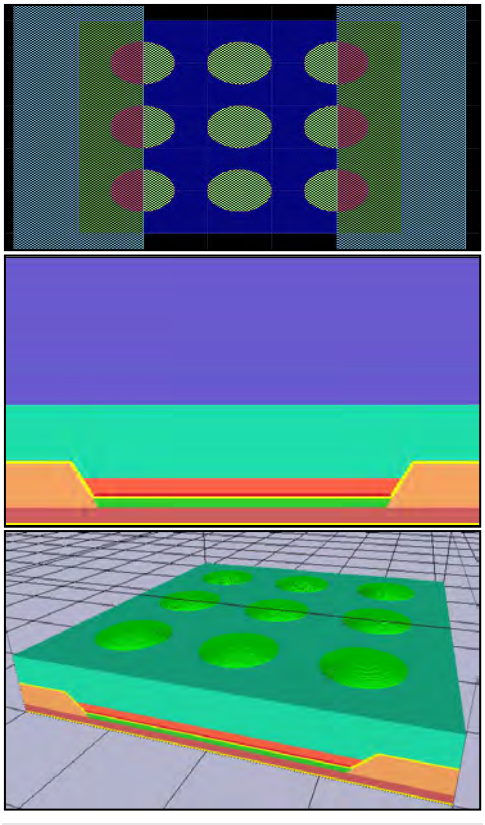
Intuitive drawing of various pat terns such as lens, grating or d iffusion film



Structure Editor

Easy structure generation

User can generate real structure without complex process from GD S II Mask file

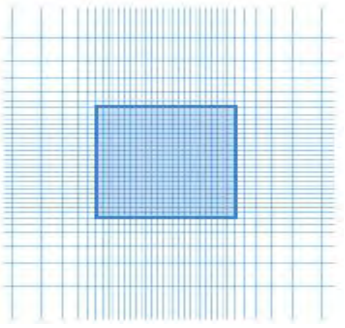


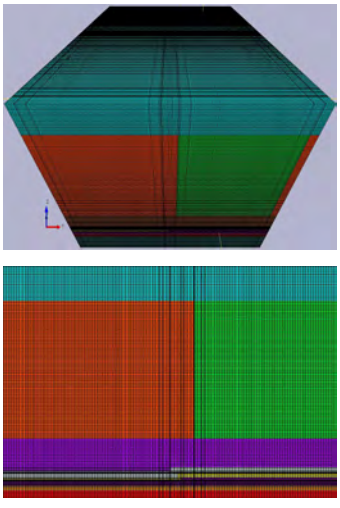
2, 3D Structure generation from GDS II

Mesh

Adaptive grid generator

The adative grid in specific region with the big physical parameter reduces run time and memory.





Mesh

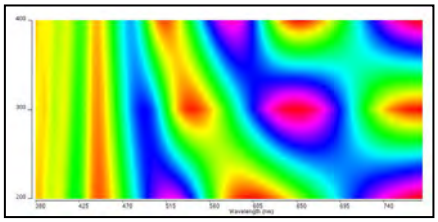
OPTIC SOLVER

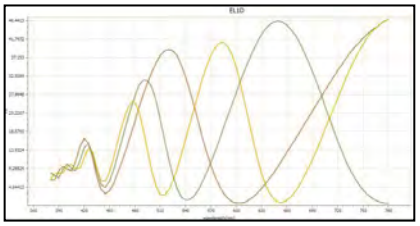
VIEWER

Various outputs and analysis tools are available in Viewer

Realization of White OLED si mulation

User can design WOLED with tandem structure and color Filter. With these fun ctions, user can do color a nalysis easily about WOL ED.

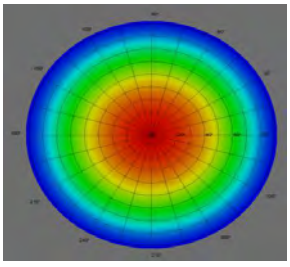




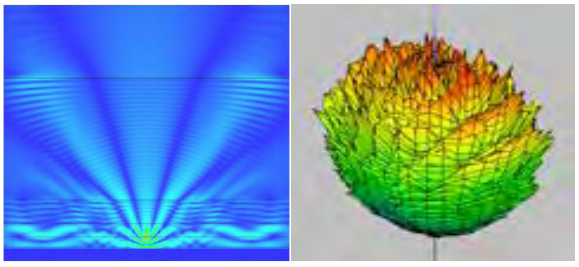
Analysis of Light effiency by layer thickness split

Electro Luminesc ence

Estimating the emitting po wer, current profile, elextr on and hole concentration, and band bending accordi ng to applying current or v oltage to OLED device



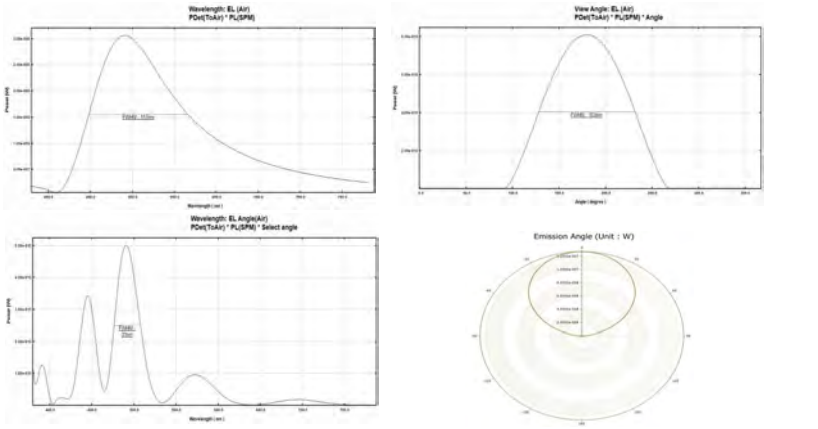
Polar plot view



Field view at specific wavelength

Absorption

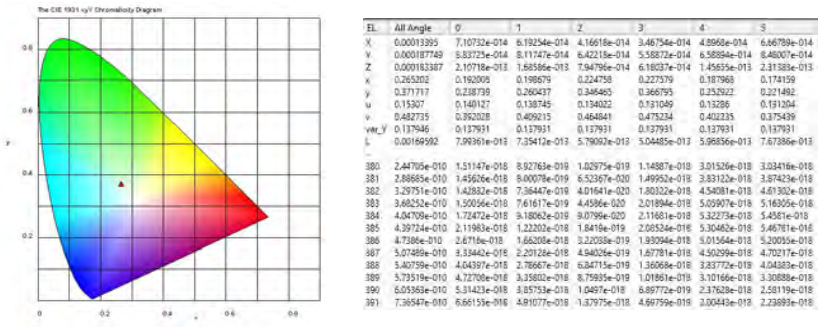
The power that is absorbed o r confined in each layer is est imated.



Varius result view by wavelength & angle

Several Boundary condition

For matching simulation to re al situation, the more effectiv e boundary condition is provi ded such as PML, PBC, and S BC.

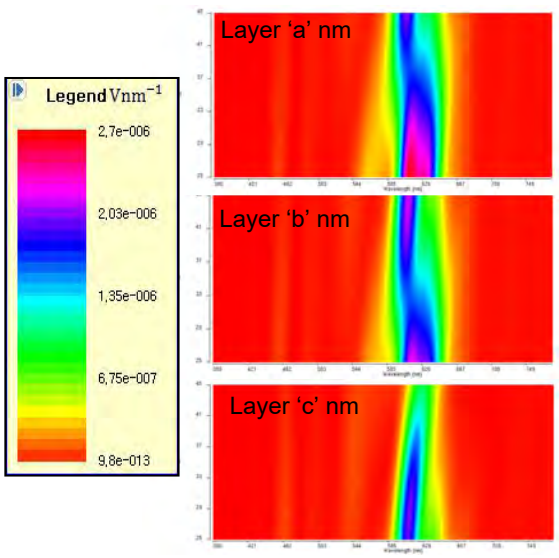


CIE xyY Diagram & Table

Our solution analyzes the optic and electri characteristics of OLED. Competitive speed, high accuracy, and controlling big memory are possible in desktop environment.

Electro Luminescence by lay er split

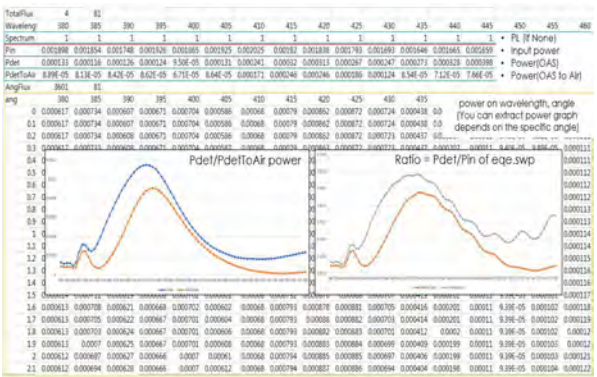
Optimization of thickness of layers and m icro-cavity effect are very important to get high luminous effiency in OLED device. E xpertOLED shows changed power of light by layer thickness split & cavity effect.



Light Efficiency by HIL thickness split

Easy Data Processing

Besides checking result in Viewer, all r esult from simulation can be opened in Excel program for user convinience. U ser can make varius result as user wan t through Excel.



Simulation Result Data in Excel

Parallel Processing

Parallel Process increases the speed of a simulation. in this mode, user can control the number of CPU.

Batch Processing

Computerized batch processing provides r unning of jobs that can run without end u ser interaction. It can be used very effecti vely in user's plan.

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