

# setfos 3

semiconducting thin film optics simulation software

OLED Lighting & Displays  
Organic Electronics  
Thin Film Photovoltaics



## setfos at a glance

**setfos** is a powerful and CPU-efficient simulation software tailored to the development of novel optoelectronic thin-film-based technologies.

**setfos** is designed to study and optimize organic light emitting diodes (OLEDs) as well as organic solar cells (OPV).

**setfos** can be used to characterize inorganic solar cells and devices like VCSELs, Bragg reflectors, or photo-diodes.

**setfos** gives insight into the device physics. Thanks to its advanced analysis features, setfos is a highly efficient predictive and descriptive scientific tool.

**setfos** enables you to inspect internal characteristics not accessible by experiment, to assess device performances and to accelerate the R&D process.

**setfos** runs on any personal computer, various operating systems and is widely used in both industrial and academic research laboratories.

**setfos** is available in 3 modules for light absorption, drift-diffusion, and dipole emission simulations. All modules can be combined according to your needs.

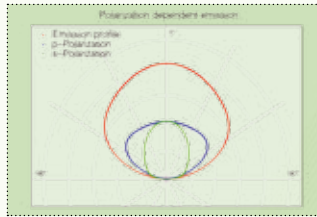
**setfos** performs 3 versatile simulation tasks: multivariable sweep, optimization, and parameter extraction.

**setfos** comes with 3 interactive views for intuitive graphical input, optional script-based input, and customizable graphical representation of results.

## setfos boosts your R&D

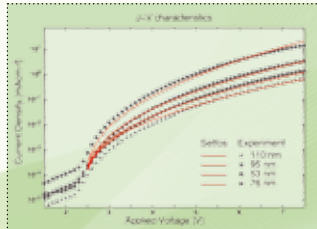
- improves your research productivity
- systematically varies multiple device parameters prior to experiment
- optimizes device performances
- extracts physical parameters

# Organic optoelectronics research made easy



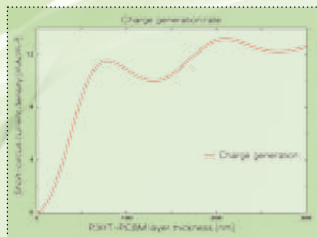
## Emission

Besides dipole emission spectra and analysis of multilayer optical modes, easily calculate the angular radiation characteristics of your light-emitting device.



## Drift-diffusion

The drift-diffusion module works out profiles and transients of device internal quantities that couple with the optical models for comprehensive optoelectronic simulations. Get insight into the physics of your semiconducting device and reproduce its I-V characteristics.



## Absorption

Through the calculation of the layer-specific absorbances, examine the critical parameters that affect the short-circuit current of your solar cell.

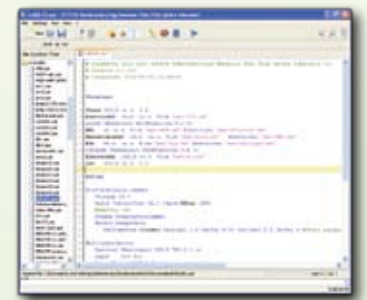
## Intuitive graphical input interface

With setfos you easily enhance your research productivity in a few mouse-clicks! Import, edit, view and export material parameters to extend your database. Comfortably specify the physical models and numerical algorithms to match your needs.



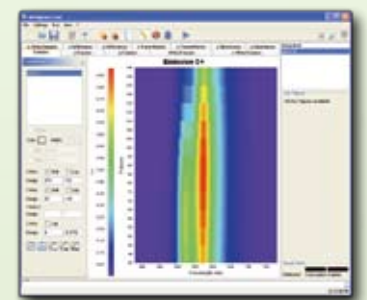
## Flexible script-based input editor

Mouse or keyboard? You have the choice! Let the integrated text editor highlight the script syntax to guide you through the whole range of customizable features offered by setfos. Additionally, inspect data files of simulation results.



## Powerful result representation

Display, import, edit and export the results of your work. Compare your measurements with setfos simulations using plot customization features. Create publication-quality graphs: edit and export to EPS, PDF, PNG, JPG, and SVG.



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## All setfos modules include

- Intuitive graphical user interface and editor for optional scripting
- Multivariable sweep, optimize and fit tasks
- Input and output in ASCII format
- Powerful plot editing tools and export capability for publication-quality graphs (PNG, JPG, EPS, PDF, SVG)
- Rich and extendable material properties database
- Automatic generation of simulation reports (HTML, PNG, EPS)
- Calculation of specific figure-of-merits like current balance, CIE color coordinates, color rendering index (CRI), solar-eye-integrated reflectance, maximum value detection
- Windows, Mac and Linux compatibility

For further inquiries, contact your local Fluxim distributor.

Find out more visiting [www.fluxim.com](http://www.fluxim.com).

Physical Models	Modules		
	Absorption	Drift-diffusion	Emission
Passive optics characteristics (reflectance, transmittance, absorbance spectra, scalar figure-of-merits, angular dependences)	✓		✓
Polarization optics	✓		✓
Coherent thin film optics	✓		✓
Incoherent substrate definition	✓		✓
Arbitrary combination of coherent and incoherent thin film optics	✓		
Spectral penetration of external illumination	✓		
Arbitrary illumination spectrum	✓		
Photon absorption rate profile	✓		
Layer-specific absorbances	✓		
Dipole emission			✓
Multiple emitters in any desired layer			✓
User-defined dipole distribution			✓
Analysis of radiated vs. dissipated power			✓
Top and bottom emission			✓
Arbitrary dipole orientation			✓
Dipole (exciton) decay dynamics		✓	✓
Generation, diffusion, energy transfer of multiple excitons		✓	
Charge drift-diffusion and trapping		✓	
Field, temperature and density dependent mobility model, extended Gaussian disorder model (EGDM)		✓	
User-defined charge distribution initialization		✓	
Customizable numerical methods		✓	

Software Applications	Absorption	Drift-diffusion	Emission
Optical coating design	✓		
OLEDs, LEDs, VCSELs optics			✓
Solar cells, photodetectors optics	✓		
Organic electronics		✓	
Fully coupled electronic-optical OLED operation		✓	✓
Fully coupled optical-electronic OPV operation	✓	✓	