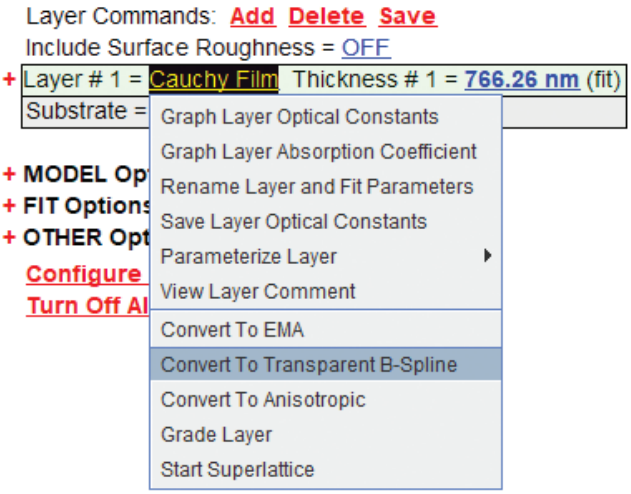
Software Update: CompleteEASE 6

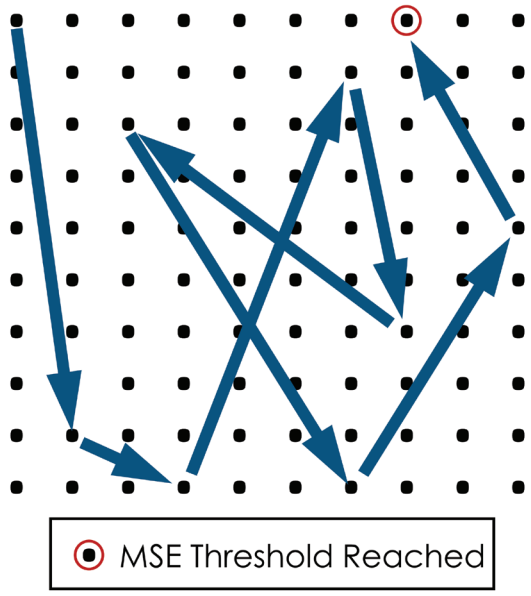
New features for the leading data analysis platform

NEW! Push-Button Analysis Tools

CompleteEASE has always included pre-built models that enable push-button analysis of transparent films. We've recently simplified the analysis procedure for semi-absorbing films by automating the B-spline layer. B-spline automation is done by pre-configuring the following parameters that previously required extensive user input:

- Configuring minimum node spacing
- Setting ranges for wavelength expansion fit
- Determining transparent wavelength range
- Converting to KK-mode
- Forcing $\varepsilon_2 > 0$





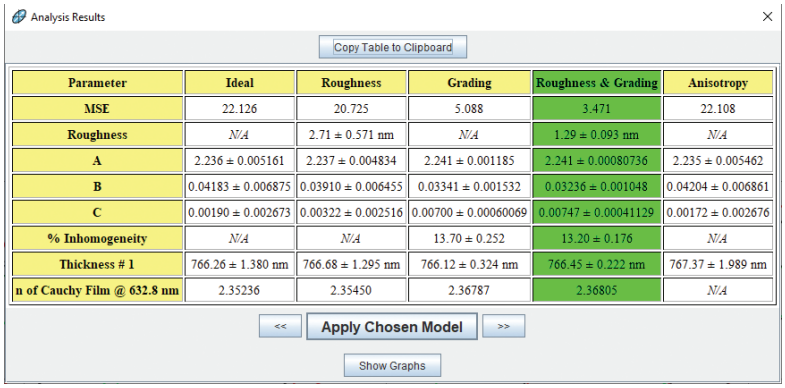
NEW! Random Global Fit

Global fitting is a function used to search a defined parameter space for a global minimum. This approach is helpful to avoid local minima that might prevent the correct fit from being obtained. A standard global fit will scan two or more parameters as a grid. Each point gets assigned an MSE value, and the minimum MSE value along with its corresponding parameters is reported at the end. Standard global fits can take a long time to complete and sometimes become impractical.

With this update, CompleteEASE is no longer limited to three global fit parameters. In addition, it is now possible to perform a random global fit, which will search the parameter space randomly instead of in a grid. The advantage of this method is that an MSE threshold can be set. Once a point below the MSE threshold has been found, the fit is then followed by a standard Levenberg-Marquardt fit. In our tests we have seen a reduction in global fit time of 5x or better using this feature.

UPDATED! Alternate Models

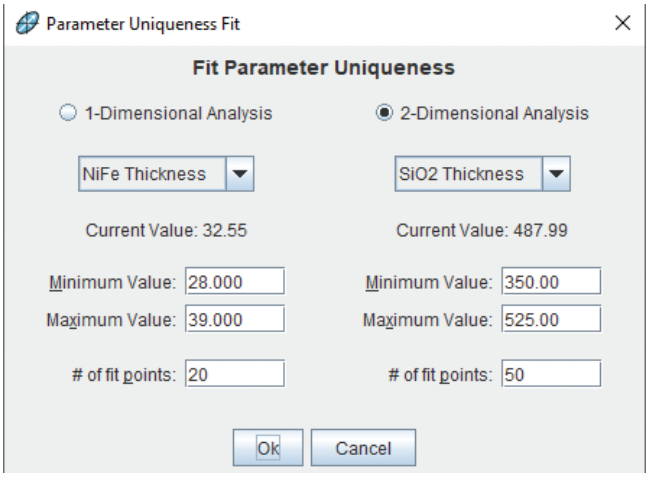
Using the Alternate Models function in CompleteEASE is a huge time saver when testing your films for common complexities. In addition to surface roughness and grading, CompleteEASE can now check for simple anisotropy. If you want to accept the model that CompleteEASE suggests, just click 'Apply Chosen Model'.

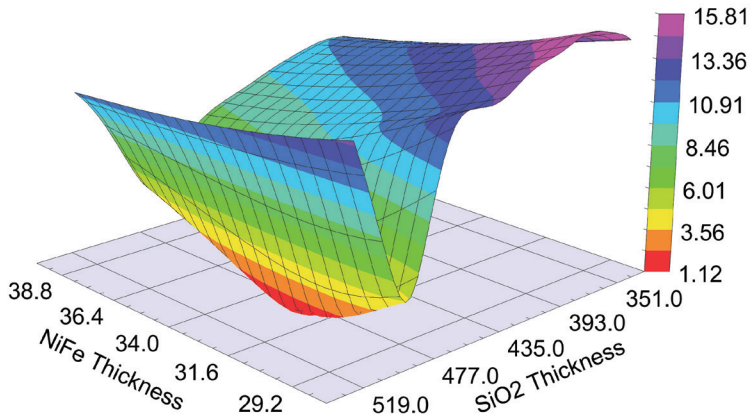


Parameter	Ideal	Roughness	Grading	Roughness & Grading	Anisotropy
MSE	22.126	20.725	5.088	3.471	22.108
Roughness	*N/A*	2.71 ± 0.571 nm	*N/A*	1.29 ± 0.093 nm	*N/A*
A	2.236 ± 0.005161	2.237 ± 0.004834	2.241 ± 0.001185	2.241 ± 0.00080736	2.235 ± 0.005462
B	0.04183 ± 0.006875	0.03910 ± 0.006455	0.03341 ± 0.001532	0.03236 ± 0.001048	0.04204 ± 0.006861
C	0.00190 ± 0.002673	0.00322 ± 0.002516	0.00700 ± 0.00060069	0.00747 ± 0.00041129	0.00172 ± 0.002676
% Inhomogeneity	*N/A*	*N/A*	13.70 ± 0.252	13.20 ± 0.176	*N/A*
Thickness # 1	766.26 ± 1.380 nm	766.68 ± 1.295 nm	766.12 ± 0.324 nm	766.45 ± 0.222 nm	767.37 ± 1.989 nm
n of Cauchy Film @ 632.8 nm	2.35236	2.35450	2.36787	2.36805	*N/A*

NEW! 2D Uniqueness Testing

Fit-parameter uniqueness testing in CompleteEASE has been a way to help users verify that they have found the global minimum MSE of a fit parameter. This update expands that functionality to allow the user to test a second parameter simultaneously. Below is an example of NiFe on SiO_2 on a Si substrate.





Other Updates Included in CompleteEASE 6

- Gen-Osc layer reorganized for ease-of-use and optimization of screen area
- Ability to fit individual angle offsets
- Graph axes can have log scaling applied
- Analysis-only version of CompleteEASE available for the latest macOS
- Retardance model improvements

How do I get my update to CompleteEASE 6?

Please email activation@jawoollam.com and include the following information:

- Instrument Serial Number (at least one)
- Institution or Company
- Primary User Name

We will then contact you with a download link and instructions on how to upgrade to CompleteEASE 6.