TFCompanion Release Notes - Version 6.4.3

Semiconsoft, Inc. - TFCompanion release notes

TFCompanion Release Notes

Build date: April 6, 2026, Version 6.4.3
Scope: This release covers the features and fixes introduced starting with the incoherent-layer update and the related workflow improvements completed afterward.

1. Incoherent Layer Modeling

- Improved incoherent-layer reflectance and transmittance modeling for stacks of the form ambient / top-stack / thick glass (or other incoherent slab) / bottom-stack / backing medium.
- Corrected buried-stack handling so coherent multilayer structure below a thick transparent substrate is evaluated consistently.
- Improved oblique-incidence treatment by using the complex refractive index consistently in attenuation and propagation terms.
- Validated incoherent-layer RT results against coherent phase-averaging reference calculations.
- Updated RT Conditions display so the Coherence control is visible only when the filmstack contains an incoherent layer.

2. Model Refinement Workflow

Load filmstack and measurement data. Select Actions/Calculate from the main menu, select Refine Model to access the feature.

- Added a separate Model Refinement dialog to help improve a filmstack starting from a known-good baseline fit.
- Added residual-guided refinement areas that list wavelength bands, peak location, signed difference, average absolute difference, and suggested focus window.
- Added focused oscillator refinement with add-oscillator, split-oscillator, and remove-suspicious-oscillator candidate generation for parameterized oscillator materials.
- Improved candidate preparation by seeding from spectral discrepancy, performing a forward precheck before Marquardt refinement, and using more conservative constraints.
- Added branching refinement so a successful add-oscillator candidate can be followed by a split of the newly added oscillator.
- Added Preview Selected and Apply flow, with refined filmstacks saved as new records using a _ref suffix so the original model is preserved.
- Cleared temporary calculated and displayed flags on newly added or split oscillator parameters before saving the refined filmstack.

3. Production Batch and Template Processing

- Added filmstack search fields in Prepare Batch and Multiple Experiments workflows.
- Added Add All and Remove All buttons for measurement loading in Prepare Batch.
- Improved mixed-folder loading so directories and non-measurement files are skipped gracefully, including TFCompanion batch-results exports.
- Improved batch filmstack isolation so one row result does not leak into the next calculation when a filmstack is assigned to multiple rows.
- Changed Production Batch export to open in the current measurement directory.
- Fixed export cancellation handling so canceling the file name or save dialog no longer throws an exception.

4. Batch Statistics and Template-Based Results

- Fixed the statistics footer in regular batch export so averages, minimum, maximum, standard deviation, and percent standard deviation are written correctly under each measured parameter.
- Added selectable sigma multiplier support (1x, 2x, 3x) for on-screen batch statistics and exported results.
- Fixed template export name matching by using full filenames first, with legacy shortened-name matching as a fallback.
- Improved template-based export robustness for small matched sets so correlation exceptions do not stop export.
- Added two new regression metrics to template-based output: Raw Regression Residual Standard Deviation and Step fidelity.
- Clarified slope-correction wording so regression-based adjusted values are not described as calibration values unless a loaded calibration is actually being applied.

5. Parameterized Material Editing

- Fixed Cauchy-family parameter mapping so the first parameter row (for example N0) has the correct editable R.W. cell in the layer dialog for materials such as Cauchy and CauchyK.

6. Additional Notes

- The incoherent-layer implementation in this release targets reflectance and transmittance workflows with coherent structure above and below a single incoherent slab

.- The Model Refinement dialog is intended as an expert workflow for guided model development from an existing baseline fit.