What's New in TRIOS Software V5.8

Released June 2024

NEW FEATURES

Rheology

Introducing the Rheo-Impedance Spectroscopy Accessory

TRIOS v5.8 provides support for the new Rheo-IS accessory for Discovery Hybrid Rheometers. Rheo-Impedance Spectroscopy offers powerful insights into microstructure of complex fluids such as battery electrode slurries, emulsions, paints, coatings and more Coupling dielectric impedance spectroscopy with the DHR's rheology measurements empowers users to characterize shear-induced changes in sample microstructures under processrelevant conditions such as mixing, storage and coating. Simultaneous precise measurements of viscosity, yield stress, viscoelasticity and recovery deliver new insights connect flow properties to underlying changes in microstructure. For more information, visit www.tainstruments.com.

Rheo-IS Accessory

ARES-G2

• The ability to repeat a step has been added to ARES-G2 tests.

Thermal Analysis

Introducing TRIOS EasyMass for Discovery DSC

For DSC users, TRIOS EasyMass offers smoother workflows, improved data reliability, and improved data traceability. The EasyMass feature grants direct data transfer from the balance itself into TRIOS, allowing for the whole workflow to occur within a single user interface.

Discovery SDT 650

• Gold and copper pan types were added to SDT.

TRIOS

TRIOS JSON Export offers your data in consistent, usable JSON files, and ensures reliable integration through a documented data schema, available at software.tainstruments.com/schemas/TRIOSJSONExportSchema, and easy ingestion and consumption with a well-documented Python library, available at github.com/TA-Instruments/tadatakit.

AutoPilot

• Added "Save to pdf" and "Rotate curve" blocks.

What's New in TRIOS Software V5.7

NEW FEATURES

Rheology

Introducing the Auto-Trim Accessory for the HR Series Rheometer

TRIOS v5.7 provides support for the new auto-trim accessory for Discovery Hybrid Rheometers. The auto-trim accessory automates the melting, gap setting, and crucial sample trimming step in polymer melt rheology testing. For more information, visit www.tainstruments.com.

HR Series Powder Rheology V2

New geometries, tests, and analysis options for Wall Friction and Compressibility.

Thermal Analysis

- Support for DSC High Temperature/High Pressure pans
- DSC firmware update to support OmniCure LX500 for photocalorimetry

TRIOS

- TRIOS Batching: Update to support generating a new control chart as part of a batch process

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What's New in TRIOS Software V5.6

NEW FEATURES

Rheology

Support for the Powder Rheology Accessory for the HR Series Rheometer

Thermal

Support for the Blending Gas Delivery Module for the Discovery™ SA

TRIOS

- Send to LIMS export option
- Additional AutoPilot blocks for Rheology and Thermal Analysis
- Guided Methods feature for Polymer customers

Bug Fixes

Rheology

- Discovery DMA 850:
  - Creep/Stress relaxation in TTS should not maintain force between steps
  - Motor Force Constant is incorrect when the computer is set to use a comma as a decimal seperatorr

- IsoStrain test strain limit is incorrect and can limit oscillation strain more than necessary
- Discovery HR/DHR:
  - Various HR/DHR Magneto-Rheology bug fixes
  - HR/DHR camera Save image checkbox not displaying if no USB camera type is found

Thermal

- Discovery DSC: Increase valid KCell constant range for T1 heat flow to account for helium experiments
- Option in Discovery TGA to continue the sequence if a pan drops
- Discovery TGA: Change default Air Cool time to 20 minutes for end of test options

ElectroForce™

- ElectroForce .sco files not opening correctly in TRIOS

TRIOS

- Autopilot: Fix display issue when running high DPI (generally laptops)
- Guardian: Uncheck the spreadsheet operation option from basic users by default

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What's New in TRIOS Software V5.5

NEW FEATURES

Rheology

Support for the **Orthogonal Superposition (OSP) Accessory** for the HR Series Rheometer

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What's New in TRIOS Software V5.4

NEW FEATURES

Thermal Analysis

Support for the **Discovery™ TMA 450 RH**

What's New in TRIOS Software V5.3

NEW FEATURES

TRIOS

- **File Export**: Option added to include analysis results in the Export to Text and Export to Excel® options
- **Analysis**: Split the existing Curve X and Y analysis model into Curve X at Y and Curve Y at X
- **File Parameters**: Record the logged-in Operator at experiment run-time
- **Guardian**: Autofill the logged-in Operator's name into the sample form

Rheology

- Support for the **High Temperature-Advanced Peltier Plate**
- **Analysis**: Calculate conversion time for curing materials
- **HR 10, HR 20, HR 30**: Axial force verification for all new HR rheometers

Thermal Analysis

- Support for the new **Discovery Sorption Analyzer (SA)**
- **AutoPilot**: Instrument control blocks added
  - Open Lid (DSC only)
  - Select Gas (DSC, TGA)
  - Gas Flow Rate (DSC, TGA)
  - Event: On/OFF (DSC, TGA)
- **Discovery DSC 25, 250, 2500**: Automatically save the auto-cal Baseline Verification plot as a pdf
- **Discovery T GA 55, 550, 5500**:
  - Added the ability to clear all pan tare values/indicators
  - Added DTA (Temperature Difference) and Weight Percent signals to the list of available signals displayed on the touchscreen
- **Discovery™ TMA 450**: Enabled the CTE signal, Alpha X1 to X2, Alpha fit X1 to X2, and Alpha at X analysis models when non-reversing dimension change signal is selected

ElectroForce™ Mechanical Test Instruments

TRIOS v5.3 now offers **data analysis support** for all ElectroForce data types, including the following capabilities:
- Live monitoring data acquired in WinTest, including Timed Data, Peak Valley, Scope, and Level Crossing file types
- Import all ElectroForce data types into TRIOS
- Overlay ElectroForce data files for sample-to-sample comparisons or merging multiple file types, such as Timed Data and Peak Valley
- Point Display option gives a point-by-point waveform view of any datapoint selected in the DMA results plots

BUG FIXES

Rheology

- **Discovery DHR/AR Ring on Plate**: Stress calculations have been corrected
- **Extensional Viscosity Accessory**: Pre-stretch and relaxation steps always collect with fast sampling, delivering improved insight to   material behavior **DHR/AR Ring on Plate**: Stress calculations have been corrected

Thermal Analysis

Adding custom calibration standards, when running TRIOS in German, is now working as expected. Previously, an error occurred upon opening the calibration standard page from the TRIOS Options dialog.

What's New in TRIOS Software V5.2

NEW FEATURES

Rheology

- Support for the **Upper Peltier Plate** for the Discovery™ Hybrid Rheometer
- Discovery DMA 850 firmware update:
  - Maintain Legacy calibration table at instrument shutdown
  - Performance improvements for legacy calibration table

Thermal Analysis

- Introducing **AutoPilot for DSC and TGA**
- **Intelligent Analysis** for Discovery DSC 25/25P/250/2500/X3
- **Thermal Kinetics**
- TMA firmware update

ElectroForce

Point Display feature enabled for ElectroForce DMA files.

BUG FIXES

Rheology

DHR/AR Pressure Cell: The friction calibration is now properly applied when using the standard pressure cell accessory on the HR x0, DHR, or AR Series instruments.

Thermal Analysis

Discovery™ TMA Film/Fiber Probe Calibration: Corrected auto-offset value units sent to the instrument, allowing for successful probe calibration.

What's New in TRIOS Software V5.1

NEW FEATURES

TRIOS

- Analysis Templates
- Analysis and Reporting with Batch Processing

Rheology

- **TRIOS Express** and **TRIOS Unlimite**d
- Support for the **next generation Discovery Hybrid Rheometer**
- **Autopilot** additional blocks added
- **FastTrack**: Users can now minimize the window
- Discovery DMA 850 firmware update:
  - Maintain position calibration at instrument shutdown
  - Improvements to temperature control with film clamp

- Improved low force performance with film clamps

Thermal Analysis
- Support for the **Discovery X3 DSC**
- When creating a run, entering a name for the procedure in the Name field updates the name in the Design View
- **Discovery TGA 55XX**: Intelligent Analysis

BUG FIXES

TRIOS
Chinese Localization: Fixed the Shift/Rotate error

Thermal Analysis
- Live data update: Processing live data would result in subsequent experiments failing to display on the graph
- **Discovery TMA 450**:
  - PID control fixed so that when the instrument is in standby temperature below room temperature without active cooling, power to the furnace is no longer lost
  - Auto Offset for the Film/Fiber Clamp now allows users to enter a custom value
  - Variables added to the text import dialog
- **Discovery™ DSC 25XX**: Corrected the range validation in the Control panel Load Pans field to no longer accept pan 55
- **Discovery SDT 650**: Fixed ramp template to no longer insert the gas switch and isothermal segment, despite them not being selected

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What's New in TRIOS Software V5.0

NEW FEATURES

TRIOS
Analysis enhancements to Pass/Fail, Statistics Analysis Model, Saved Analysis.

Rheology
- **AutoPilot Option** for TRIOS Software and the DHR Rheometer
- Support for the DHR **High Sensitivity Pressure Cell**
- Discovery DMA 850 firmware update
- **History View**
- Rheology users can now select the display precision for different signals
- DHR users can now save and load instrument settings

Thermal Analysis
Support for the **Discovery TMA 450**

What's New in TRIOS Software V4.5

NEW FEATURES

TRIOS

- **TRIOS software now requires 64-bit operating system for TRIOS 4.5 and above**
- **Guardian**:
  - Signature levels were added to printouts
  - Changes in group permissions are now logged in the audit trail
  - The "Users" and "Levels" buttons are disabled when the "Enorce Authorized Windows Users" setting is disabled

Rheology

- **DHR enhancements:**
  - Support for the Rheo-Raman accessory for the DHR
  - Advanced options and fluid-specific settings for UHP cooling
  - Improved drivers and support for Keysight LCR meters
  - Expanded support for compression geometry in additional temperature systems and accessories, including Peltier Plate and Magneto-Rheology
- **ARES-G2 enhancements**:
  - Support for the ARES-G2 Hight Sensitivity Pressure Cell
  - Prompt the user when new firmware is available
- **DMA 850 enhancements**:
  - Prompt the user when new firmware is available
  - Ability to modify end temperature in oscillation temperature ramps
  - Support for applying constant volume calculations when testing film and compression samples by accounting for changes in sample length
  - Option to maintain the current force or strain in Conditioning blocks
  - New option to automatically terminate a Conditioning step when equilibration is reached
  - Support for terminating test steps when a specified parameter reached equilibrium
  - Added the capability to collect data in Conditioning Temperature/ Humidity blocks over extended periods (> 10,000 points)
  - Improved gap reporting in film submersion clamps
  - Improved furnace PID control in film clamps
  - Improved axial force control when running tests that start at maximum force (Oscillation Strain Motor only)
  - Improved temperature set points when sequencing consecutive temperature ramp steps
  - Additional checks and safeguards to account for GCA hardware errors

Thermal Analysis

- **Discovery™ DSC 25/250/2500 enhancements**:
  - Heat Flow Phase Adjustment
  - Fictive Temperature option introduced

BUG FIXES

TRIOS

Guardian: Fixed a bug preventing V4.4 from opening multiple results log files at the same time

Thermal Analysis

- **Discovery DSC 25/250/2500**: Sigmoidal baseline integration on a cooling curve with an exothermic peak was fixed to use the appropriate tangents
- **Discovery TGA 55/550/5500**:
  - Fixed a bug where a load pan failure would require the instrument to be rebooted
  - TGA 5500 IR Furnace only: Fixed a bug where the Electromagnet Off segment could cause unexpected test termination

What's New in TRIOS Software V4.4

NEW FEATURES

TRIOS

- **Guardian enhancements**:
  - Added the ability to customize user groups
  - Support for file versioning
  - Added the option Force Password On Startup
  - Added the option Force User Comments on All Results Log Entries
  - Added the option to print Guardian settings
  - Added Import/Export for easier configuration of Guardian on multiple PCs
  - Added the ability to assign Windows groups to Guardian user levels
- **Localization**: Discovery™ Series DSC 25XX, TGA 55XX, SDT 650, and DMA 850 now support additional languages

BUG FIXES

Rheology

Miscellaneous bug fixes for the Discovery DMA 850

Thermal Analysis

Fixed Purity Analysis bug where the KCell onset slope wasn't being saved.

What's New in TRIOS Software V4.3

NEW FEATURES

TRIOS

- TRIOS Reports feature introduced
- Parameter view of TRIOS data files updated to include instrument calibration dates, calibration source files, and information from the instrument Options page.

Rheology

- Support for the **Discovery DMA 850**
- Support for the **Interfacial Exchange Cell** for the DHR/AR

Thermal Analysis

Support for the Discovery DSC **Microscope Accessory**

What's New in TRIOS Software V4.2

NEW FEATURES

TRIOS

Guardian enhancements:
- Added the full file path/name of the original file to the parameters of a TRIOS results file
- No longer create TRIOS temporary files in the default data path. This allows for the removal of delete privileges on this path for nonadministrative users
- Only allow Administrative Users to define the default path
- Added the entire TRIOS build number to the printout of the graph and the Method name to the graph header
- Added an entry to the Notofication Log to show when TRIOS is shut down
- Added an option to set the duration of the Notification Logs. Users are now able to select an open multiple logs together using the
- Open feature in the Log table
- Fixed the formatting of the logs to keep all columns on the same line
- Log sample size and overlay modications were made to the Results Log

Rheology

- User Analysis Models are introduced
- Sample Scalars are introduced

Thermal Analysis

- Support for the **Discovery™ SDT 650**
- Support for the **Discovery DSC 25P**
- Step Scalars introduced

What's New in TRIOS Software V4.1

NEW FEATURES

Rheology

Support for the **Humidity (RH) Accessory** for the DHR

Thermal Analysis

- Support for the **Discovery TGA 55/550/5500**
- Support for the **Photocalorimeter Accessory (PCA)** for the Discovery DSC 25/250/2500

What's New in TRIOS Software V4.0

NEW FEATURES

TRIOS

- Improved printing: You can now choose to print the graph to match the aspect ratio of the currently displayed graph window; Print PDF All Views option was added.
- Authoring in Guardian
- Merge Steps feature added

Rheology

- Support for the **Electrically Heated Cylinder** for Discovery™ Series, AR-G2, AR2000ex, and AR1500ex rheometers.
- **Discovery DHR enhancements:**
  - Experiment Print feature added
  - New procedure steps: Arbitrary wave, IsoForce, IsoStrain, Axial
  - Updated firmware v9.42

Thermal Analysis

- Support for the **Discovery DSC 25/250/2500**. Includes additional features exclusive to the DSC 25/250/2500:
  - Variable Precision
  - Resume
  - History View
  - Experiment Print
- Data Table feature introduced
- New Analysis options added: Linear Transform, Baseline, Desmear, and Special area analysis for DSC Peak Integration

BUG FIXES

Rheology

Fixed multiwave oscillation that was broken in a previous release.

What's New in TRIOS Software V3.3.1. 4668

NEW FEATURES

Rheology

DHR firmware v9.39 is a mandatory update for all DHR users.

Thermal Analysis

The Special Area Analysis option was added to Peak Integration (enthalpy) parameters.

What's New in TRIOS Software V3.3.1. 4363

NEW FEATURES

TRIOS

Multi-language support: Now includes German language support, in addition to the previously released Chinese, Russian, and Japanese support.

Rheology

- Added ElectroForce™ test import support
- Visual improvements
- Added an extra step to verify old experiment methods are removed during uninstalls and upgrades

BUG FIXES

Rheology

- Corrected bending geometry equations
- Fixed the polynomial analysis Advanced Parameters tab
- Discovery™ DHR firmware v9.38: Fixed Pressure Cell MAPOFF/MAPON when used in conjunction with changing geometries

What's New in TRIOS Software V3.3.1. 4246

NEW FEATURES

TRIOS

Multi-language support: Now includes Russian and Japanese language support, in addition to the previously released Chinese support.

Rheology

- Support for the **Modular Microscope Accessory** for DHR
- **FastTrack enhancements**:
    - Added Start Up and Shut Down utilities
    - Significant figure added to MSCR report
    - Results table added for Cannon standard
    - Fail graph y-axis set to log scale
    - Auto Asphalt Calibration XML report file support added to replace content removed by Microsoft®
- DHR firmware update v9.36
- ARES-G2 firmware update for extra protection for Tart Database files

BUG FIXES

Rheology

FastTrack:
- Initial stress for MSCR and High Stress Repeated Creep corrected
- R10 calculation corrected for High Stress Repeated Creep
- Fixed temperature gauge issues

What's New in TRIOS Software V3.2

NEW FEATURES

TRIOS

- Analysis User Interface updated with Edit Analysis function
- Analysis Library introduced
- Graph enhancements: cutting and pasting annotations, Adjust Drops option for Peak Integration Analysis
- Text Importing and Exporting

Rheology

- New **FastTrack Software** for asphalt testing
- **Air Chiller System (ACS-3) and Chiller Panel Accessory** for ARES-G2/RSA-G2/DHR.
- TTS at explicit frequency
- **Discovery™ DHR/AR**: Auto strain adjustment added to conditioning options
- **Discovery DHR**:
  - Support for DHR DMA
  - Support for AASHTO TP 101-12 asphalt LAS test
  - Support for Immobilization cell
  - Tare gap: Sets teh current head position as the zero reference
  - DHR Instrument Event Log saved every time TRIOS is closed

Thermal Analysis

- **Discovery TGA**:
  - Reset sample size option
  - Weight change option
  - Weight at Time/Temperature option
  - Weight Loss at Time/Temperature option
  - Residue option
- **Discovery TGA/DSC**:
  - Running Integral analysis option
  - Autocalibrations and scheduling runs

What's New in TRIOS Software V3.1

NEW FEATURES

TRIOS

- Limited bandwidth download option
- Ribbon changes – Home and View tabs consolidated into a single Experiment tab
- Legend menu
- New Curves user interface

Rheology

- **ARES-G2 enhancements**:
  - Orthogonal Superposition (OSP) feature
  - DMA mode
  - Proportional Axial Force Control
  - Motor Control Panel
  - Phase Calibration now using a hermite spline rather than polonomial fit to the phase error
  - Repeat function added to procedure steps
  - Motor boost – A second power amplifier was added to double the motor power output
  - Electro Rheology conditioning block was updated to allow for voltage ramps and disconnection of the power amplifier for a better "zero voltage" point
- **ARES-G2/RSA-G2 enhancements**: Geometry calibrations updated to match the method used by DHR/AR rheometers.
- **ARES-G2/DHR enhancements**: Support for Tribo-Rheometry accessory
- **DHR/AR enhancements**:
  - Support for DHR Optics Plate Accessory, Building Material Cell,and Bayonet Peltier Plate
  - DHR Pressure Cell:
    - Support for vane and starch rotor added
    - Calibration page correctly refl ects mapping status
    - Resetting of geometry gap fi xed
    - Map only applied during test to avoid over speed error when magnetic coupling not engaged
  - DHR Gap Compensation Calibration: Now allows calibrations to be performed from high to low temperatures
  - DHR zero gap: Deceleration added to existing standard and axial force modes
  - DHR Flow Sweep: Scaled time average option fixed
  - Concentric cylinder
    - The end effect field can be changed in a results fi le which will force a recalculation of the data
    - Rheology Advantage™ files now load with the end effect set to 1
    - Rheology Advantage files measured with ver.1 Double Gap load with the correct immersed height
- **Analysis enhancements**:
  - Spriggs and Oldroyd models for oscillation data that were previously available in Rheology Advantage are now available in TRIOS V3.1
  - Carreau-Yasuda model for flow data added
  - Arrhenius model improved with better starting conditions

Thermal Analysis

- Discovery™ TGA: Modulated TGA (MTGA) support
- Discovery DSC: Gas 1 selection can now only be used for nitrogen

What's New in TRIOS Software V3.0

NEW FEATURES

TRIOS

- New connection dialog
- Single connection
- Moving Window Type option in Analysis section of TRIOS Options
- Properties panel

Rheology

- New data analysis models: Area under the curve, Thixotropy, Modulous crossover, Carreau-Yasuda
- Navigator launcher for Rheology Navigator
- Ares-G2 enhancements:
    - Axial force control
    - Advanced Options conditioning block
- RSA-G2 enhancements: End of Test conditioning block
- DHR/AR enhancements:
    - Extensional Test now allows extensional rate/velocitytorque to be positive or negative
    - Split data option added to oscillation time sweep, temperature sweep, and temperature ramp.
    - End of step behavior

Thermal Analysis

- Removed restart option on touch screen
- Reduced the number of power cycles required during upgrades

Additional Information

INSTALLING TRIOS SOFTWARE

For instructions on installing TRIOS software, refer to the Installing TRIOS Software instructions.

MORE RESOURCES

A number of additional resources are available to you. For assistance with TRIOS software, first consult the Help.

For immediate assistance contact the TA Instruments Hotline at +1 302-427-4000 from 8:00 am to 4:30 pm EST.

For email support, please send your question to one of the following:
thermalsupport@tainstruments.com
rheologysupport@tainstruments.com
microcalorimetersupport@tainstruments.com

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