

## 1 Purpose

viva 1.1 extends the analytical possibilities in electroplating bath analysis.

The new software version includes additional measuring techniques and calibration methods allowing users to analyze additional types of electroplating baths:

- Baths with three additives
- Baths for the pulse-plating technique
- Baths containing iron

viva 1.1 now enables temperature measurements of the measuring solution by means of a temperature sensor connected to the measuring instrument's temperature measuring input.

A number of further adjustments, improvements and bug fixes expand the application range and increase the analysis system's usability and operational reliability.

## 2 New features

### General

- **Sample type Intercept**  
New sample type for brightener determination with the **LAT** calibration method.
- **Renaming of the HCR and LCR command variables**  
The command variables **HCR** and **LCR** of the voltammetry commands have been renamed **HR** and **LR**.
- **Creating new methods**  
Because of the functional expansions in viva 1.1, we recommend that new methods should always be created based on the method templates from viva 1.1.

### New calibration methods

- **LAT**  
LAT (Linear Approximation Technique) is a calibration method for the determination of the brightener concentration in electroplating baths. LAT is a two-stage process. First, the intercept value is measured, and then, after a solution exchange, the sample.

- **RC**  
The response curve is a standardized calibration curve for electroplating bath additives with a suppressing effect. It involves a two-stage process, in which a calibration curve is first recorded with a standard solution before the sample solution is measured.

### **New commands**

- **Voltammetry command CPVS**  
The **CPVS (Cyclic Pulse Voltammetric Stripping)** command is a voltammetry command for the electroplating bath analysis with **CPVS**. It is mainly used for the determination of various organic additives in electroplating baths. The **CPVS** command can only be inserted in VA tracks.
- **Voltammetry command CP**  
The **CP (chronopotentiometry)** command is a voltammetry command for the electroplating bath analysis with **CP**. It is used for galvanostatic film deposition as well as for measuring the open-circuit potential in electroplating baths. The **CP** command can only be inserted in VA tracks.
- **Measuring command MEAS T**  
Command for temperature measurements.
- **Call command CALL ELECTROLYTE**  
Command for **calling a VA track**. The data acquired in the called VA track is used in the **RC (Response Curve)** calibration method for the determination of additives with a suppressing effect (e.g. leveler).
- **Dosing command SET TOTAL VOLUME**  
The **SET TOTAL VOLUME** command is a dosing command for the manual entry of the current total volume in the measuring vessel, e.g. after automatic rinsing or a manual exchange of solution.

### **Workplace program part**

- **Peak result display**  
The peak evaluation results (peak potential and area or height) are shown in the live display directly after the evaluation.

### **Database program part**

- **Show "Reprocessing with history"**  
Status display in the **Reprocessing** dialog window indicating whether **Reprocessing with history** is activated or deactivated.
- **"Send with history"**  
Users can select whether they want to send all versions or only the first and the last version of a determination.
- **"Export with history"**  
Users can select whether they want to export all versions or only the first and the last version of a determination. The export of several determinations at the same time is now much faster.
- **Report templates expanded**  
All report templates with measurement curve display have been expanded such that the measurement curves of all commands are displayed. When updating from viva 1.0 to viva 1.1, an additional, revised report template is installed for each report template installed in viva 1.0. All old report templates with the date **Saved = 2013** and **Saved by = Metrohm** can be deleted.

### Method program part

- **Fixed point evaluation**

Fixed point evaluations allow users to obtain the measured value for the current or the potential at a previously defined potential or time.

### Configuration program part

- **Setting the option Reprocessing with history**

With the new option **Reprocessing with history**, users can select whether all recalculated versions of a determination (option: **on**) or only the last and the original determination (option: **off**) are to be saved in the database. The default setting is **off**.

- **Templates for output lines**

Various signal patterns for the output lines are predefined under **Tools ▶ Templates**. Like custom-designed input lines, they can be exported and imported.

- **Calibration data subwindow**

The **Calibration data** subwindow lists all calibration data sets. The calibration data list can be output as a PDF file. Data sets that are no longer required can be deleted.

### Manual program part

- **Temperature measurement**

The temperature of a solution can be measured manually.

## 3 Improvements

### General

- **E-mails to several recipients**

E-mails can be sent to several recipients.

- **Special characters in user-defined results**

Additional special characters (+, \*, (, )) can be used in the names of user-defined results.

### Workplace program part

- **Curves subwindow / Measurement curve**

In the curve window, a separate tab with the respective command name (e.g. **CVS 1**) is displayed for each measuring command. The way the tabs are arranged depends on how the commands are ordered in the run.

- **Curves subwindow / Calibration curve**

The calibration curve window has been redesigned with a clearer arrangement. The window partition now automatically adjusts to the contents displayed when the window is enlarged or reduced.

- **MEAS TMF**

The determination of the transmission factor (**MEAS TMF** command) has been optimized.

## Database program part

- **New example determinations (for import)**

The example determinations have been re-recorded in viva 1.1 and replace the existing viva 1.0 example determinations. In addition, example determinations are available that include new commands and calibration methods .

- **Faster recalculation**

The recalculation is much faster when determinations are reprocessed.

- **Faster display of measurement curves**

Measurement curves for large determinations are displayed much faster in the Curves subwindow.

- **Curves subwindow / Calibration curve**

The calibration curve window has been redesigned with a clearer arrangement. The window partition now automatically adjusts to the contents displayed when the window is enlarged or reduced.

- **Database monitoring**

The default value for the **Maximum size** during database monitoring has been raised to 5,000 MB.

## Method program part

- **New method templates**

Existing method templates have been adjusted for use in viva 1.1. Additional method templates for the use of new commands and calibration methods are offered.

- **New example methods (for import)**

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- **CALL COND**

If **Evaluation quantity** is activated as stop criterion, then the **CALL COND** command will now be executed in a method run also if **no calibration** is defined as calibration method.

- **Expanded curve smoothing**

The scale for curve smoothing applied during data processing has been extended to 40. A value between 1 and 40 can now be set for smoothing the measurement curves recorded with VA measuring commands.

- **New evaluation parameter variables**

The evaluation ratio for the calibration method DT is available as evaluation parameter variable **ED** from the **Calibration** section of the **Evaluation** subwindow.

The concentration value and the concentration unit of the standards is available as evaluation parameter variable **ED** from the **Standards** section of the **Evaluation** subwindow.

- **New command variables for LOOP**

The **LOOP** command has been completed by the command variables run time (**DBL**), stop type (**STY**) and signal ratio (**SRAT**). If a loop is canceled, then the stop criterion that was met is documented with a command variable.

## 4 Fixed bugs and problems

### Workplace program part

- **Dosing is disabled after stop / emergency stop**

If users cancel a determination by clicking on the **[Stop]** or **[Emergency stop viva]** button, then the dosing devices immediately stop their ongoing actions.

- **Evaluation start**

If calibration points for the calculation of a calibration curve's regression are selected automatically, then all points above the evaluation start are excluded, regardless of the chronological sequence of data acquisition. Below the evaluation start, all points located in the falling segment of a calibration curve's regression are included in the calculation of the regression. This change in the evaluation start also affects the reprocessing of determinations in the **Database** program part.

- **Time display**

While a **CVS** command is run, the measured value display in the live display shows the time for the parameter **Time** when a potential with waiting time is applied.

- **Report output improved**

The simultaneous output of several reports as PDF and per e-mail has been improved.

- **Error message if the stirrer is not connected**

If the stirrer specified in the method is not found when a **STIR** command is executed, then the user will be notified of this with an error message.

- **Error message in case of an invalid stirring rate**

If an invalid value or a formula yielding an invalid value is entered for **Stirring rate**, then the user will be notified of this with an error message when the command is executed.

- **Canceling the live display**

When a determination is run with a method consisting of several parallel tracks, a single one of these tracks can now be canceled in the context menu.

- **Live modification of substance names**

In the **Evaluation** subwindow in the workplace, substances can no longer be renamed live.

- **Jammed stirrer**

If the stirrer jams during the electrode test or a determination, then the ongoing method will be canceled.

- **Method saving**

The function **Method/Save As...** is disabled as long as no method has been selected on a newly created workplace.

- **Report definition**

If all options are selected in the **Report output** section of a **REPORT** command (**Printer**, **PDF file** and **Send e-mail**), then the printout, the PDF file and the e-mail are correctly created.

### Database program part

- **Volume entry with formula**

If the volume is entered by way of a formula in the commands **ADD AUX**, **ADD STD** and **ADD SAMPLE DT**, then the volume will not be recalculated during reprocessing but the actually dosed volume will be used for the calculation of the volume record. For this reason, the volume can no longer be edited during reprocessing in the dialog window of the respective **ADD** command.

- **Several CALL COND type commands during reprocessing**

If several commands of the type **CALL COND** are run through in the same determination, then they will be properly calculated during reprocessing.

- **Command variables during reprocessing**

If user-defined results are entered that access command variables, then these are calculated during reprocessing.

- **The dialog window opens only once**

In the case of actions requiring a user entry or a selection in quick succession, the respective dialog window opens only once.

### Method program part

- **CVS command with equilibration time = 0 s**

If the equilibration time is set to **0** on the **Pretreatment** tab in a **CVS** command, then the correct current measuring range is now also found in the subsequent sweep.

- **Maximum number of characters increased**

The maximum number of characters has been increased for the **Device name** field in the dialog window of the **CTRL** command.

- **Creating a new method during reprocessing**

New methods can now also be created while the **Reprocessing** window is open.

- **Checking of the 'Sample type' sample data variable in the method check**

If the **LAT**, **MLAT**, **DT** or **RC** calibration method is applied, then the software will check already in the method check whether the **Sample type** sample data variable is present in the **START** command.

- **Drag and drop improved**

The drag-and-drop functionality has been improved in the Method run window.

- **RLS DOS**

The **RLS DOS** command allows users to select and use all four dosing device connectors of an 894 Professional CVS for releasing dosing devices.

- **Report output**

Reports are output with the correct contents as PDF file and/or printout.

### Configuration program part

- **Sorting the "Colorimetric sensors" table**

The rows within the table of colorimetric sensors can now be correctly sorted in ascending or descending order in the **Colorimetric sensors** sub-window.

### **Manual program part**

- **Dosing with a dosing unit not yet included in the configuration**

If, in manual control, a user tries to use a dosing unit that is not yet included in the table of dosing units in the configuration, then a notification appears that the dosing unit has to be included in the table before it can be used.

**Herisau, May 16, 2014**

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P. Hunziker  
Vice President,  
Head of Development



U. Kürsteiner  
Head of Quality Management