



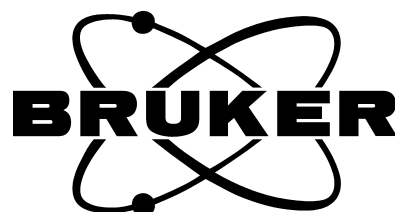
OPUS

Spectroscopy Software

Version 6

User Manual

AAR



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This manual is the original documentation for the OPUS spectroscopic software.

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1 Introduction

Automatic Accessory Recognition (AAR) automatically recognizes the accessory (ATR, transmission, etc.) used for sample measurement.

On changing the accessory in the sample compartment, AAR identifies the accessory, performs several tests, adapts the sample measurement parameters and opens the OPUS *Measure* menu to start the sample measurement. The test sequences and the sample measurement parameter settings are defined in the *ADF.dat* accessory definition file.

You will be guided through AAR by a graphical user interface. If the measurement has been completed the instrument status is written in the *Sample Parameters* directory of the HISTROY data block.

1.1 User Rights

AAR distinguishes between two types of users: administrator and operator. Their rights are defined by the *User settings/Rights* function in the OPUS *Setup* menu. If the user has the right to change parameters (administrator), he is allowed to

- register a new accessory.
- change parameters in the *ADF* file.
- create test reference measurements.

Otherwise, the user can only perform the standard AAR. AAR automatically stops if an exception occurs requiring the AAR configuration to be changed.

2

Activating AAR

To activate or de-activate AAR you have to perform the following steps:

- Select the *Optic Setup and Service* option in the *Measure* menu.
- Click on the *Devices/Options* tab.
- Activate the *Automatic Accessory Recognition* check box.
- Click on the *Save Settings* button to save the settings.
- Exit OPUS and restart the program. Shortly after an accessory has been inserted into the sample compartment, the first AAR dialog will be displayed on the screen.

3

Automatic Accessory Recognition Software

When installing an accessory for the first time, it has not been registered. If an accessory is placed into the sample compartment, the software detects the accessory, tries to recognize the crystal type (in case of ATR accessories) and allows to select the experiment file for future measurements.

This step is repeated whenever a new accessory is inserted into the sample compartment for the first time. Each accessory has a unique and integrated identification code. Even if you have two accessories of the same type, the code will be different.

Anytime you start OPUS, the program checks whether an accessory has been inserted into the sample compartment. If OPUS detects an accessory, AAR will be loaded and executed. AAR also starts if you change an accessory, provided OPUS is running and the spectrometer switched on.

3.1 Registering New Accessories

If an accessory currently not registered is detected by AAR, the following window is displayed:

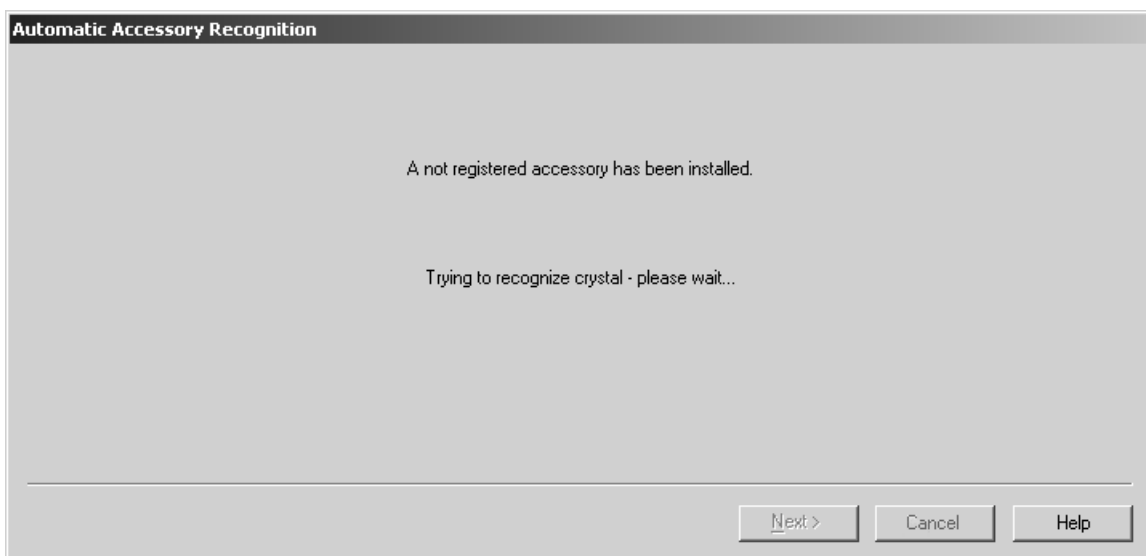


Figure 1: Recognizing crystal

In case of ATR accessories an automatic crystal recognition will be performed. Then, it is indicated that an unregistered accessory has been installed.

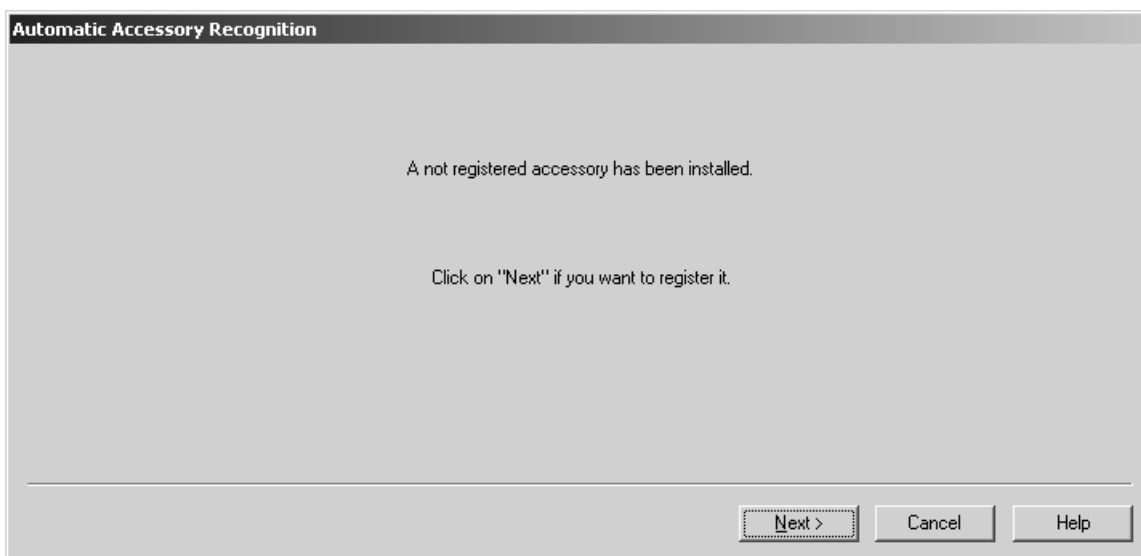


Figure 2: Registering new accessories

To register the accessory click on the *Next* button. The following dialog will be displayed:

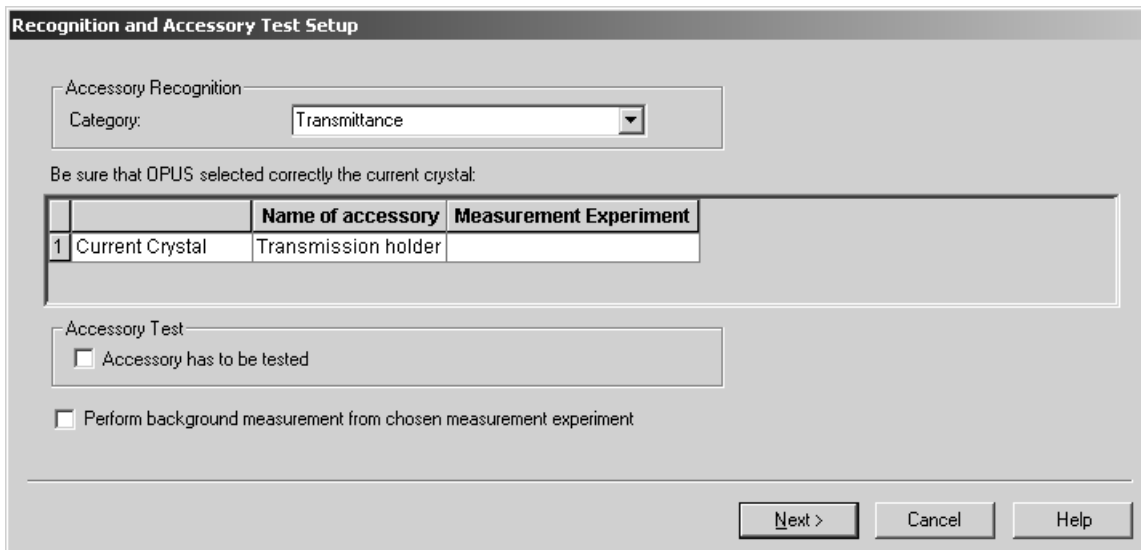


Figure 3: Selecting measurement experiment

Select the appropriate accessory category. The following types of category are available:

- ATR (1 crystal)
- ATR several crystals
- Transmittance
- Reflection
- DRIFT (diffuse reflection unit)

The name of the accessory is displayed automatically. Check whether this name is correct.

For each accessory a unique set of measurement parameters has to be defined defined in a so-called measurement experiment file. This file has the extension *.XPM. Select the measurement experiment file from the *Measurement Experiment* column. Clicking on the column displays a drop-down list with already existing measurement experiments.

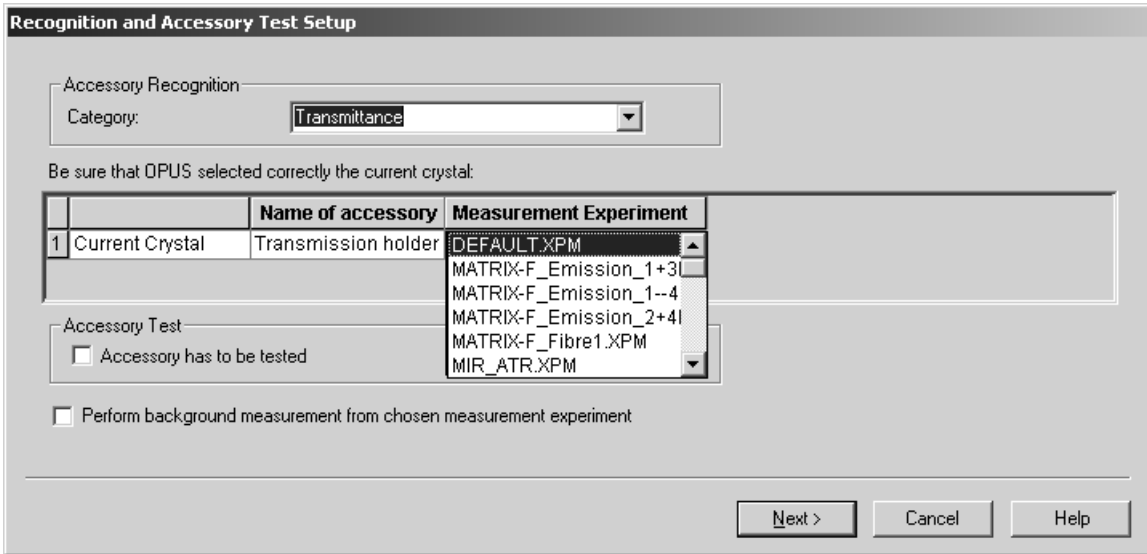


Figure 4: Selecting measurement experiment

If you have selected the *ATR several crystals* category before, the *Crystal type* column is displayed.

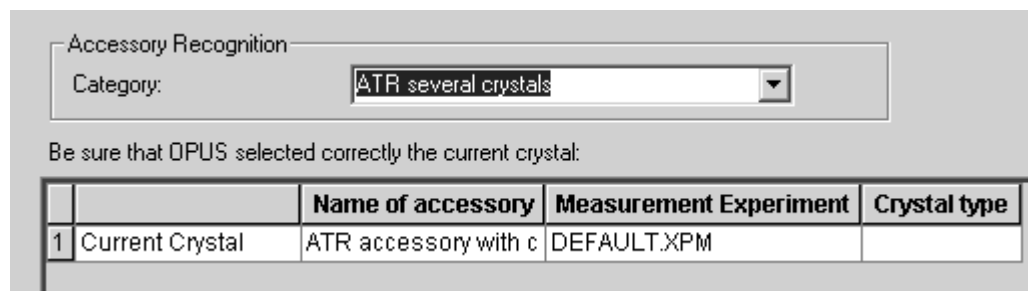


Figure 5: Additional Crystal type column

Clicking on the column displays a drop-down list with already existing crystal types.

Accessory Recognition

Category: ATR several crystals

Be sure that OPUS selected correctly the current crystal:

	Name of accessory	Measurement Experiment	Crystal type
1	Current Crystal	ATR accessory with c	DEFAULT.XPM

Accessory Test

Accessory has to be tested

Diamond
Diamond+ZnS
Ge
Si
ZnSe
others

Figure 6: Selection of crystal types

Select the appropriate crystal type from the drop-down list.

If required, activate the check box for both the accessory test and the background measurement. Click on the *Next* button.

3.2 AAR Tests

If the different accessory information has been stored, the program will run a number of reference measurements as well as a background measurement for the experiment loaded. These tests are obligatory to ensure a proper use of the accessory.

The status of the single tests is displayed, i.e. a red cross indicates that the test has failed. An error description is displayed apart from possible troubleshooting measures to be taken.

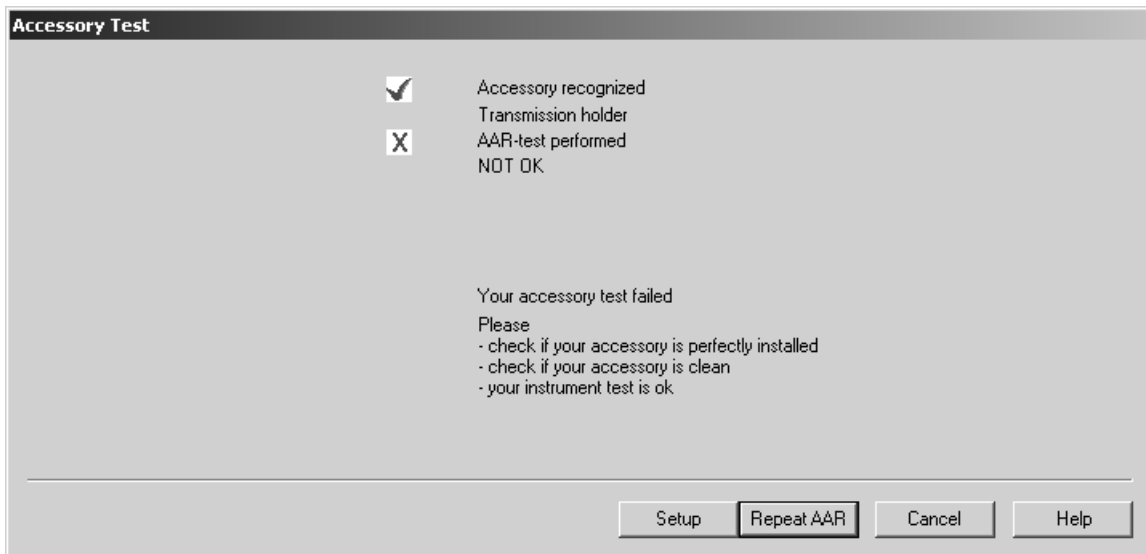


Figure 7: AAR test status - Test failed

A green check mark indicates that the test has passed, and is also displayed if AAR has recognized the accessory.

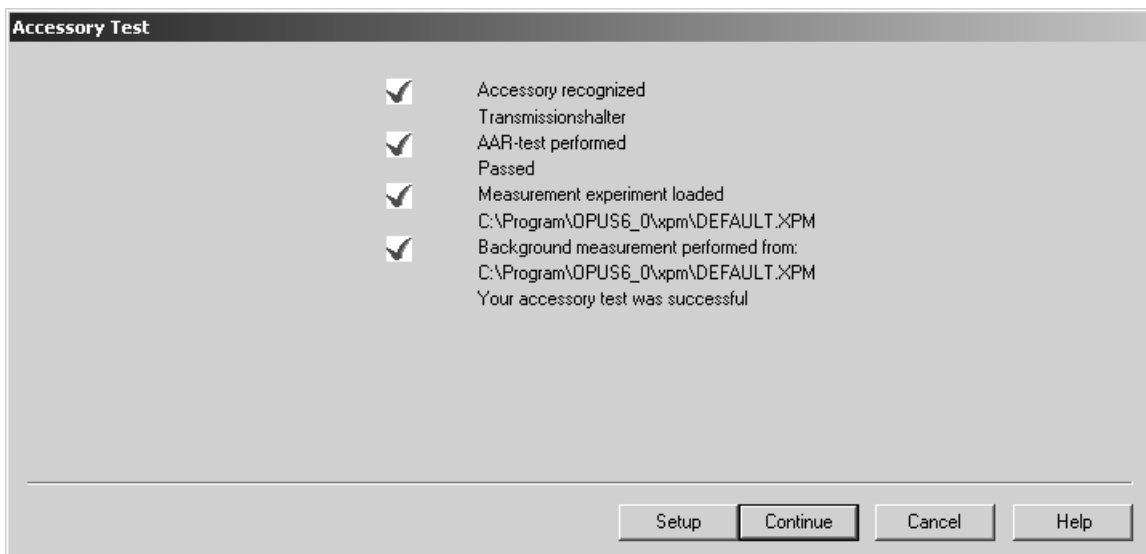


Figure 8: AAR test status - Test passed

Clicking on the *Continue* button opens the *OPUS Measurement* dialog including all parameters previously defined. Now, you can start the sample measurements.

Anytime you start OPUS the program checks whether an accessory has been inserted into the sample chamber. If OPUS detects an accessory, the automatic accessory recognition dialog is displayed. This also occurs in case of replacing accessories.

4 APPENDIX

4.1 Definitions and Abbreviations

AAR: Automatic Accessory Recognition

Single-channel measurement: Measured spectrum without calibrating a background spectrum.

Test measurement: Measurement performed during AAR. The result is a single-channel measurement.

Empty-channel measurement: Measurement with an empty sample compartment. The result is a single-channel measurement. It is used to transform a test measurement into a transmission measurement. As different accessories require different measurement parameters, you have to perform an empty-channel measurement for each accessory.

Final test measurement: Transmission measurement with the accessory inside the sample compartment.

ADF.dat: Accessory Definition File. This file includes the name and ID of each accessory registered, as well as additional parameters specifying this accessory.

Sample measurement: Each accessory is assigned to a sample measurement. The parameters of this measurement are loaded when AAR has been finished.

NTI-measurement parameters: These measurement parameters determine the optic configuration. Their values allowed are stored in the *Spectrometertype.nti* file. *Spectrometertype* is a wildcard for the spectrometer specified (e.g. vec33.nti).

Generic measurement: Measurement parameters which do not depend on spectrometer parameters.

ID-measurement parameters: NTI-measurement parameters which specify the optic component inserted in the spectrometer by reading the ID.

4.2 Accessory Definition File format (ADF.dat)

The accessory definition file includes information of all registered accessories. Each single accessory has its own parameter block preceded by the accessory ID. This accessory definition file is stored in the *OpusBase\aar_dir* directory.

The following applies to the *ADF.dat*:

- 1) *ADF.dat* is an ASCII text file.
- 2) Each entry is identified by keywords. These keywords are written in capital letters preceded by an exclamation mark. The subsequent line contains the corresponding values.
- 3) The accessory is defined by the following set of parameters (the keywords are indicated in brackets):
 - Unique accessory ID (!ID)
Format: As given by OPUS. *Do not change this entry!*
 - User-defined accessory name(!NAME)
Format: string
 - Accessory category (!CATEGORY)
Format: Integer
 - Values for optic components e.g. detector, beam splitter and source (!DEVICES)
Format: OPUS measurement parameter format
Note: These parameters are optional.

4.3 Test Measurement

The test measurement is performed by means of the OVP (OPUS Validation Program). For detailed information on the appropriate OVP tests refer to the OPUS Reference Manual, chapter 13.

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