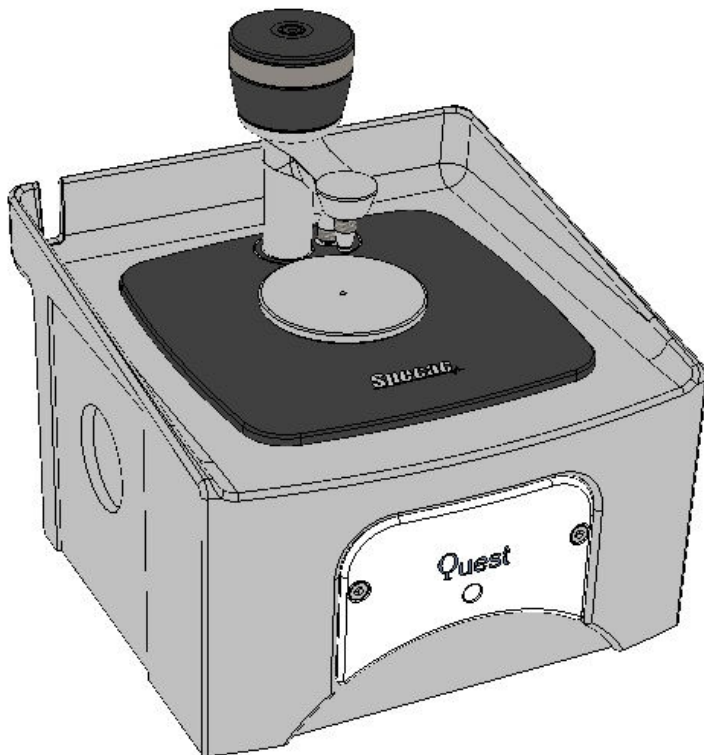




# Podded Smart Quest ATR Accessory for Shimadzu Instruments

## *User Manual*





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*User Manual*

# *Podded Smart Quest ATR Accessory P/N GS10900 Series for Shimadzu Instruments*

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## **CONTENTS**

1. INTRODUCTION .....	3
2. SAFETY CONSIDERATIONS .....	5
3. CHECKLIST OF CONTENTS.....	6
4. FITTING OF THE COVER PLATE GS10854 INTO SHIMADZU SPECTROMETERS.....	7
5. INSTALLATION OF THE PODDED SMART QUEST ATR ACCESSORY INTO THE SPECTROMETER .....	9
PURGING THE PODDED SMART QUEST ATR ACCESSORY.....	11
ALIGNMENT PROCEDURE.....	12
6. PODDED SMART QUEST ATR ACCESSORY GS10900 SERIES "BUBBLE NUMBER" PART IDENTIFICATION LIST.....	12
7. PODDED SMART QUEST ATR ACCESSORY SPARE PARTS .....	13
8. PODDED SMART QUEST ATR ACCESSORY SERIAL NUMBERS .....	14

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## 1. Introduction

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Thank you for buying a Specac product. We trust it will provide you with invaluable and excellent service in use.

The Podded Smart Quest Single Reflection ATR Accessory P/N GS10900 Series for Shimadzu Instruments is a variant of the Quest ATR Accessory (P/N GS10800 Series) that has been specifically designed for installation and use in a Shimadzu IR-Affinity or Tracer 100 IR spectrometer system from a silicon chip contact point of recognition.

The standard optical unit of the Quest ATR Accessory is replaced by a custom designed, podded unit that matches the Shimadzu IR-Affinity and Tracer 100 spectrometers profile. The podded unit assembly supports a standard Quest ATR accessory top plate and clamp anvil arm assembly for use of the different standard Quest ATR crystal pucks. The entire Podded Smart Quest ATR Accessory is installed directly into the spectrometer sample compartment without the need of a Benchmark™ baseplate support mount. Recognition is established by the silicon chip's contact from a correct installation of the Podded Smart Quest ATR Accessory into position.

There are eight different configurations of Podded Smart Quest ATR Accessory under the P/N GS10900 Series consisting of a choice of four different ATR crystal puck options supplied on two different surface coloured podded units. They are provided under the following part numbers:-

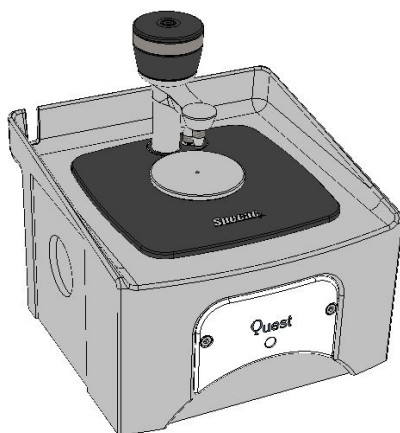
- GS10900-B - Quest ATR Diamond Accessory (Black).
- GS10900-R - Quest ATR Diamond Accessory (Red).
- GS10901-B - Quest ATR Diamond Accessory extended range (Black).
- GS10901-R - Quest ATR Diamond Accessory extended range (Red).
- GS10902-B - Quest ATR ZnSe Accessory (Black).
- GS10902-R - Quest ATR ZnSe Accessory (Red).
- GS10903-B - Quest ATR Germanium Accessory (Black).
- GS10903-R - Quest ATR Germanium Accessory (Red).

## User Manual

An additional special part supplied with the Podded Smart Quest ATR Accessory for Shimadzu spectrometers is a cover plate (P/N GS10854). The cover plate is used to seal over the gap exposed between the optical bench's internal componentry and the top, rear lip edges of the standard sample compartment, when the standard sample compartment lid has been removed. The standard sample compartment lid of the spectrometer must be removed to allow for an installation of the Podded Smart Quest ATR Accessory, hence the cover plate prevents any potential ingress of dirt/dust etc into the optical bench of the spectrometer itself.

This User Instruction Manual for the GS10900 Series of Podded Smart Quest ATR Accessory for Shimadzu Instruments is to be used in conjunction with the standard Quest ATR Accessory User Instruction Manual, also supplied. Descriptions for the installation of the Podded Smart Quest ATR Accessory and fitting of the cover plate (P/N GS10854) into the spectrometer are to be followed from this User Instruction Manual 2I-10900-1.

A subsequent alignment procedure and the actual sampling usage of the Podded Smart Quest ATR Accessory are to be followed from the Quest ATR Accessory User Instruction Manual 2I-10800-6.



### **Podded Smart Quest ATR Accessory for Shimadzu Instruments**

## 2. Safety Considerations

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With use of any spectroscopic accessory that involves the study of a wide range of chemical samples, the associated risk in handling may mostly be attributed to the specific sample type to be handled itself. As far as it is possible you should follow a procedure for safe handling and containment of the type of sample to be used.

With respect to safety of use specifically to the Quest ATR Accessory, this uses different crystal materials for the ATR crystal puck assemblies where a sample is brought into contact for analytical spectroscopic study. As standard, Diamond (type IIIA), Germanium (Ge) and Zinc Selenide (ZnSe) are the three crystal materials of choice that can be used.



**Caution:** *Out of these three different crystal types, ZnSe is the most potentially hazardous material with respect to toxicity risk in use and handling.*

Both diamond and Ge crystal materials can be considered relatively safe to use, although Germanium may be harmful to the body if it is ingested in significant quantity. The general rule when working with **any** crystal material (and sample) **is to always wear gloves and safety gear** (e.g. safety spectacles) when handling to obviate the risk of contact with the skin.

Provided with each crystal version of puck assembly is a window material safety data sheet for the crystal material itself that can be consulted for safe handling. A copy of each of these datasheets can also be found in the Quest User Instruction Manual 2I-10800-6 in the **Notes On Cleaning** Section found on pages 37, 38 and 39.

### 3. Checklist of Contents

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The Podded Smart Quest ATR Accessory for Shimadzu Instruments (GS10900 Series) is provided in its own specific packaging.

Depending on which Quest ATR system has been ordered (surface colour of the podded unit and particular crystal puck assembly), will determine the items to check on delivery.

Please check for the following.

- 1 Podded Smart Quest ATR Accessory (GS10900 Series) including podded optical unit (with top surface colour of choice) and clamp arm and anvil assembly.
- 1 Stainless steel flat anvil P/N GS10820.
- 1 Stainless steel pellet anvil P/N GS10821.
- 1 Volatiles cover P/N GS10825.
- 1 Cover plate for Shimadzu spectrometers P/N GS10854.
- 1 ATR crystal puck assembly (choice of Diamond, ZnSe or Ge crystal puck assembly).

Any additional Quest ATR crystal pucks ordered with the accessory.

- 1 Ball driver 3.0mm (for optical unit cover plate removal).
- 1 Ball driver 2.5mm (for mirror adjustment in optical unit).
- 1 Instruction manual 2I-10900-1 for Smart Quest ATR Accessory
- 1 Instruction manual 2I-10800-6 for Quest ATR Accessory.
- 1 Quickstart guide QS-10800-6 for Quest ATR Accessory.

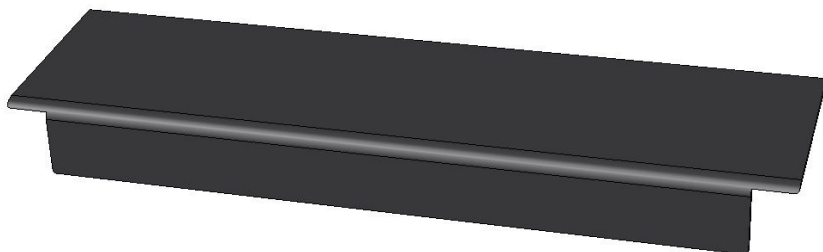
Carefully remove your Quest ATR Accessory and ATR crystal puck assembly(ies) from the packaging in readiness for use.



## 4. Fitting of the Cover Plate P/N GS10854 into Shimadzu Spectrometers

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The cover plate P/N GS10854 supplied is shown as **Fig 1**. It is used to seal over the gap exposed between the optical bench's internal componentry and the top, rear lip edges of the standard sample compartment when the standard sample compartment lid has been removed to prevent any potential ingress of dirt/dust etc into the optical bench of the spectrometer itself.



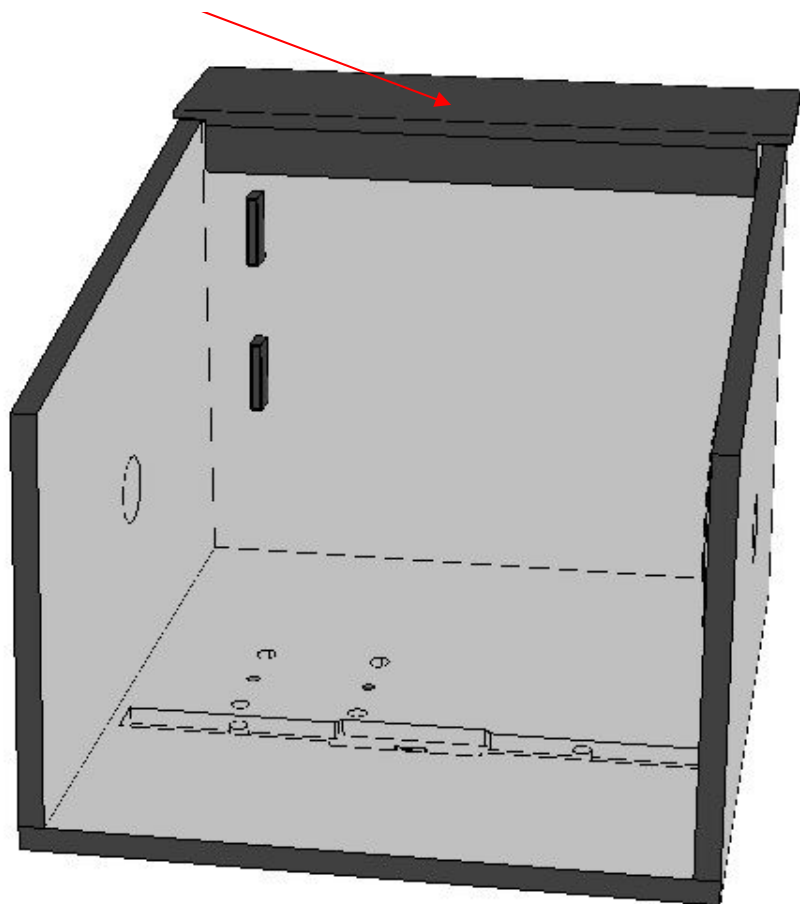
**Fig 1. Cover Plate P/N GS10854**

Magnetic contact points attached to the underside of the cover plate are used to affix the cover plate simply into position within the sample compartment area.

To fit the cover plate P/N GS10854 correctly into position the standard sample compartment lid must be removed from the spectrometer. (Please refer to the user instructions supplied with the Shimadzu IR-Affinity and/or Tracer 100 instrument for advice on how this procedure is carried out).

When the sample compartment lid has been removed the cover plate P/N GS10854 is positioned from a simple alignment and push fit for engagement of the magnetic contact points as shown in **Fig 2**.

Cover Plate GS10854

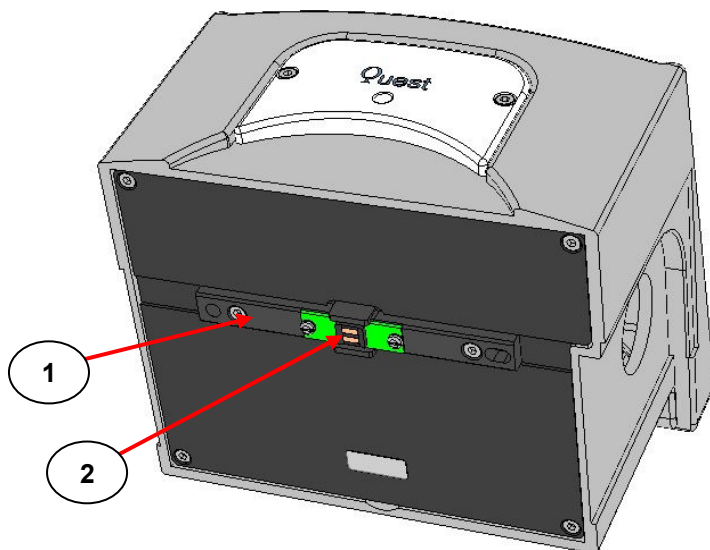


**Fig 2. Cover Plate GS10584 as Positioned Correctly in the Sample Compartment Area of the Shimadzu Spectrometer**

## 5. Installation of the Podded Smart Quest ATR Accessory into the Spectrometer

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In reference to the underside fixings of the Podded Smart Quest ATR Accessory, there is a location bar (1) where the silicon chip's contact point (2) is affixed, to allow for recognition of the Accessory. (See Fig 3.)



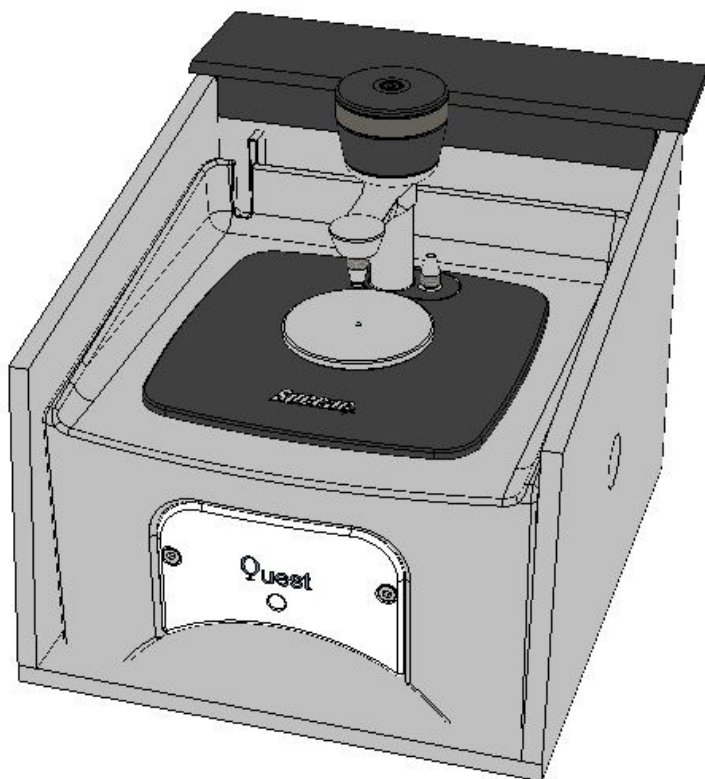
**Fig 3. Underside View of Podded Smart Quest ATR Accessory**

For correct installation, the complete Podded Quest ATR Accessory is carefully lowered into place within the sample compartment such that the location bar (1) and silicon chip contact point (2) engage centrally and towards the front of the sample compartment. (The chip's connection point is in the grooved recess channel of the floor of the sample compartment.) The whole Podded Quest ATR Accessory will sit flat and evenly level with the floor of the sample compartment when the location bar (1) and chip contact point (2) components are properly engaged.

**Caution!** *The silicon chip contact point of the location bar on the underside of the Podded Smart Quest ATR is in a relatively exposed position, so be very careful when installing or removing the complete assembly of parts from the sample compartment to prevent any damage occurring.*



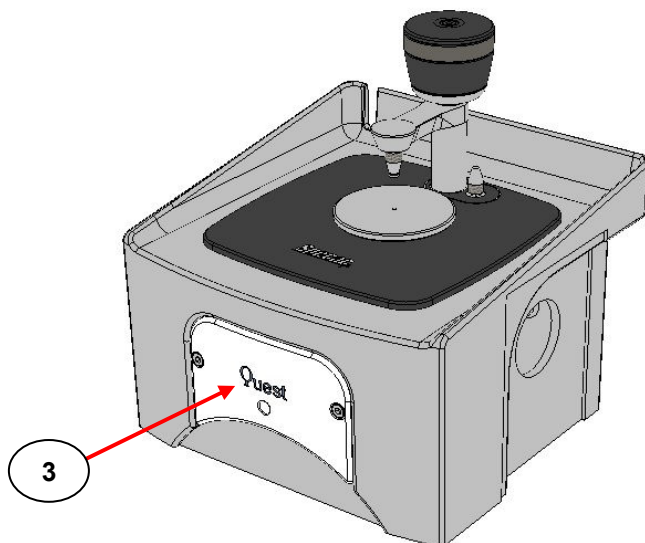
**Fig 4.** shows when the Podded Smart Quest ATR Accessory has been correctly installed into the sample compartment.



**Fig 4. Podded Smart Quest ATR Accessory as installed into the Shimadzu IR-Affinity or Tracer 100 Spectrometer**

## Purging the Podded Smart Quest ATR Accessory

It may be desirable when operating the Podded Smart Quest ATR Accessory to purge the optical unit with an inert gas like nitrogen ( $N_2$ ), to stabilize for the environment and reduce any contributions of carbon dioxide ( $CO_2$ ) and/or water vapour features as seen in an Infrared spectrum.



**Fig 5. Compression Strips and Front Cover Plate on the Podded Smart Quest ATR Accessory**

To establish a purge gas if necessary, please refer to Section 6, pages 18 to 19 in the User Instruction Manual 2I-10800-6 for the standard Quest ATR Accessory regarding removal of the front cover plate (3) as shown at **Fig 5**. for connection of a purge tube.

**Note:** *The front cover plate (3) for the Podded Smart Quest ATR Accessory differs in look and from a central positioning of a purge tube connection hole when compared to the front cover plate of the standard Quest ATR Accessory. Removal of the front cover plate and attachment of a purge tube are similar operations.*

## Alignment Procedure

When the Podded Smart Quest ATR Accessory has been installed from **a first fitting** into the sample compartment, the Accessory will need to be fine-tuned for an optical alignment for the specific spectrometer system for an optimum energy throughput performance.

Access to the optical components to adjust for an alignment procedure requires removal of the front cover plate (3).

To carry out an alignment procedure on the Podded Smart Quest ATR accessory please follow the alignment procedure instructions as found in the standard Quest ATR Accessory User Instruction Manual 2I-10800-6 from page 8 and onwards.

## *6. Podded Smart Quest ATR Accessory GS10900 Series “Bubble Numbers” Part Identification List*

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- (1) Location bar on underside of Podded Smart Quest ATR Accessory.
- (2) Silicon chip contact point on underside of Podded Smart Quest ATR Accessory.
- (3) Front cover plate on Podded Smart Quest ATR Accessory.

## *7. Podded Smart Quest ATR Accessory Spare Parts*

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### **Complete Accessories – (Optical unit with clamp arm assembly, specific ATR crystal puck option and Benchmark™ baseplate)**

- GS10900-B - Quest ATR Diamond Accessory (Black).
- GS10900-R - Quest ATR Diamond Accessory (Red).
- GS10901-B - Quest ATR Diamond Accessory extended range (Black).
- GS10901-R - Quest ATR Diamond Accessory extended range (Red).
- GS10902-B - Quest ATR ZnSe Accessory (Black).
- GS10902-R - Quest ATR ZnSe Accessory (Red).
- GS10903-B - Quest ATR Germanium Accessory (Black).
- GS10903-R - Quest ATR Germanium Accessory (Red).

### **Replacement Crystal Puck Assemblies**

- GS10810 Quest ATR Diamond Crystal Puck.
- GS10811 Quest ATR Diamond Extended Range Crystal Puck.
- GS10812 Quest ATR ZnSe Crystal Puck.
- GS10813 Quest ATR Ge Crystal Puck.

### **Spare Parts**

- GS10820 Quest ATR Self Leveling Flat Anvil.
- GS10821 Quest ATR Pellet Anvil.
- GS10825 Quest ATR Volatiles Cover.
- GS10854 Cover plate for Shimadzu IR-Affinity and Tracer 100.

## 8. Podded Smart Quest ATR Serial Numbers

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Your Podded Smart Quest ATR Accessory will be provided with a serial number for identification of certain individual part assemblies. To help you, please use the grid below to fill in the serial number information of the Quest ATR Accessory parts you have received. If you need to contact Specac for any issues regarding your Quest ATR Accessory, it may be necessary to provide the serial number of the item to identify for replacement parts.

<b>Smart Quest ATR Part Number and Description</b>	<b>Serial Number</b>
GS10900-B - Quest ATR Diamond Accessory (Black)	
GS10900-R - Quest ATR Diamond Accessory (Red)	
GS10901-B - Quest ATR Diamond Accessory extended range (Black)	
GS10901-R - Quest ATR Diamond Accessory extended range (Red)	
GS10902-B - Quest ATR ZnSe Accessory (Black)	
GS10902-R - Quest ATR ZnSe Accessory (Red)	
GS10903-B - Quest ATR Germanium Accessory (Black)	
GS10903-R - Quest ATR Germanium Accessory (Red)	



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