

# Smart Multi-Bounce HATR

For Multiple-Reflection ATR Analysis

The Thermo Scientific Smart Multi-Bounce HATR crystal has a pathlength of 10.1 micrometers, while the smallest pathlength of a typical transmission cell is 15 micrometers. This short pathlength makes the Smart Multi-Bounce HATR suitable for samples that absorb strongly and yields better results than transmission. In addition, the Smart Multi-Bounce HATR is well suited for providing information about the surface properties of a material.

## Example Applications

- Aqueous solutions
- Solvents
- Flexible films
- Gels
- Soft powders

## Unique Features

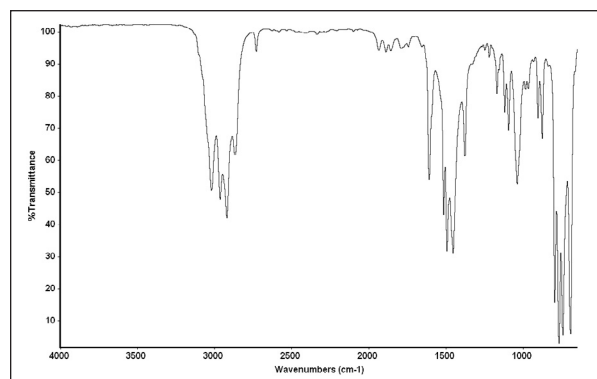
The horizontal sampling surface is ideally suited for obtaining high-quality infrared spectra – without the need for sample preparation. There are convenient storage spaces within the cover of the accessory which accommodate the accessory's sampling tools, such as a powder press and volatile liquid cover.

The Smart Multi-Bounce HATR uses crystals mounted in plates that are pinned in place on the accessory. This allows you to change plates by simply lifting one off and placing another on. All of the Smart Multi-Bounce plates are Teflon coated to improve chemical resistivity and prevent discoloration. Once measurements have been made, the crystal may be wiped clean or if necessary the whole plate can be simply lifted off and removed for rapid cleaning.

## Plate and Crystal Choices

### Multi-Bounce HATR Trough Plate Kit

The trough plate kit is useful for analyzing liquids, powders, pastes, and gels. The ATR crystal is recessed and mounted into a trough shaped, leak-proof sampling plate. The ATR crystal sample plate restricts catastrophic liquid spills from damaging the accessory in any way. Also included is a volatile liquid cover that eliminates solvent evaporation and a powder press to ensure good contact between powdered samples and the crystal.



Xylene mixture with 45° ZnSe trough with Smart Multi-Bounce HATR

### Multi-Bounce HATR Flat Plate Kit

The flat plate kit is useful for analyzing films and coatings on flat samples. Flat plates are configured with the crystal 'flush' with the surface of the plate. The pressure device included with the flat plate kit ensures reproducible pressure and uniform optical contact between the sample and crystal.

### Smart Multi-Bounce HATR Combination Plate Kit

The combination plate kit is ideal when a variety of liquid and solid samples are analyzed. This kit includes both trough and flat plates, and the following sampling tools:

- Volatile liquid cover
- Powder press
- Pressure device



### Crystal Materials

The standard crystal material is zinc selenide (ZnSe), with a 45 degree angle of incidence. This material is well suited for almost all routine sampling. Zinc selenide is fairly hard, and is utilized for neutral pH solutions.

The optional Germanium crystal has a high refractive index with a shallow depth of penetration into the sample, making it well suited for measuring samples with a high refractive index, such as carbon-filled polymers. Although germanium has a limited spectral range, it offers good chemical resistivity to both acids and bases.

## Specifications

**Crystal Material:** Zinc Selenide, standard; (4000 – 650 cm<sup>-1</sup>)  
Germanium, optional; (4000 – 800 cm<sup>-1</sup>)  
Silicon, optional; (4000 – 1500 cm<sup>-1</sup>)

**Number of Reflections:** 10

**Crystal Angle:** 45°

**Pathlength:** Approximately 10 micrometers

**Sample Volume (trough):** 0.5 milliliters

## Ordering Information

Accessory	Part Number
Smart Multi-Bounce for Solids	0028-3XX
Smart Multi-Bounce for Liquids	0028-3XXT
Smart Multi-Bounce Combination Kit I (for Liquids & Solids)	0028-2XX

XX = 99 for Nicolet™ iS™ 10 and Nicolet x700    XX = 99 for Nicolet Nexus™  
XX = 97 for Nicolet 380 and Avatar™