

AUTOMATED OPTION

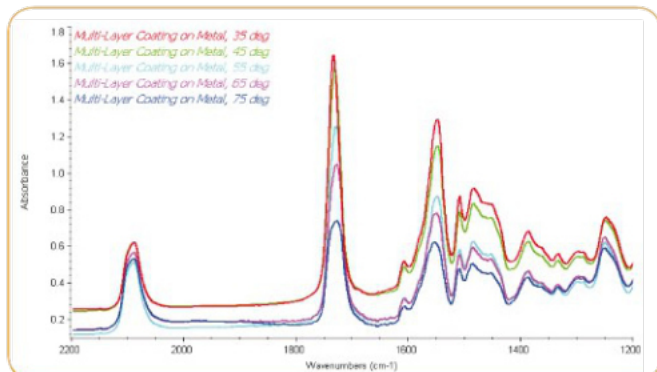
## VeeMAX III – The Ultimate Variable Angle Specular Reflectance Accessory



### FEATURES

- Selectable angle of incidence – from 30 to 80 degrees in 1 degree increments
- Measurement of thin films and monolayers to relatively thick films
- Optimize specular reflectance results with selectable angle of incidence
- Integrated position for IR polarization – essential for monolayer analysis and study of polymer orientation
- Optional single reflection ATR crystals – see ATR section
- Automated option with AutoPRO software for automated, high-precision experiments
- Sealed and purgeable optical design to eliminate water vapor and carbon dioxide interferences

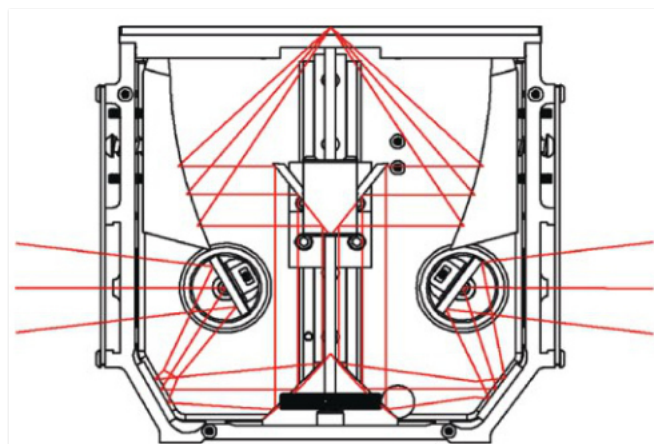
The PIKE Technologies VeeMAX III is a high-performance research-grade specular reflectance accessory. Its unique variable angle optical design (U.S. Patent No. 5,106,196) makes it a key accessory to analyze a wide range of samples. Typical VeeMAX III applications include depth profiling, analysis of monolayers and ultra-thin films, determination of polymer orientation and spectroelectrochemistry. From monolayers to relatively thick films, all experiments may be



Optimization of the analysis of a multi-layered coating on metal substrate using the VeeMAX III.

optimized by varying the angle of incidence from 30 to 80 degrees. Changing the angle is as easy as turning the angle selector on the front panel of the accessory.

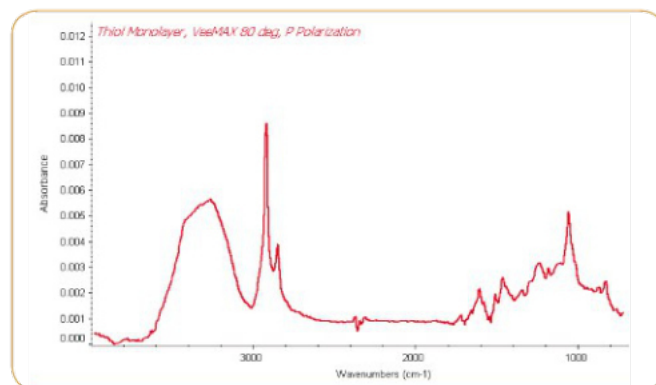
To make measurements, the sample is placed face down on the sampling surface. Designed for unrestricted access to the sampling area, large samples may be readily analyzed. Thanks to the optical design of this accessory and the quality of the optics, excellent throughput is realized even at high angles of incidence. All powered mirrors are diamond turned for optimal performance.



Proprietary beam path within the VeeMAX III specular reflectance accessory.

To suit different sample geometries, masks with 2", 5/8" and 3/8" apertures are provided. Another important design feature of the VeeMAX III is its enclosed optics for purging, which eliminates the need to purge the entire sample compartment. This significantly decreases sampling time. It is furnished with two polarizer mounts allowing the PIKE polarizer to be inserted into the accessory on either the source or detector side of the spectrometer. The polarizer setting dial is easily accessed while never breaking the purge when changing polarizer orientation.

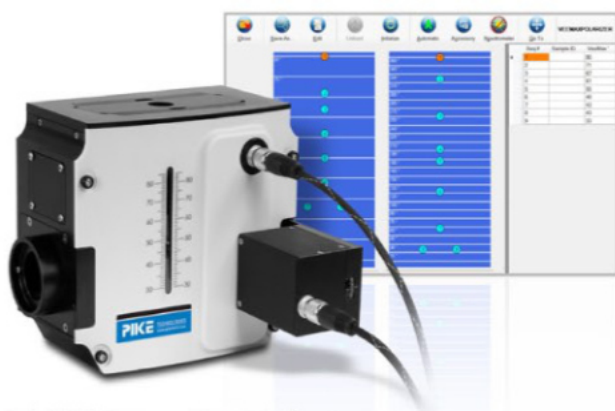
To further expand on the versatility of the VeeMAX III, the accessory may be fitted with an ATR flat plate allowing for variable angle ATR experiments. Please see the ATR section of our catalog for complete configuration options.



FTIR spectrum of thiol monolayer measured using the VeeMAX III specular reflectance accessory set at 80 degrees angle of incidence, ZnSe polarizer and MCT detector.

An optional automated version of the VeeMAX III accessory is available. It features a servo motor with USB interface and PIKE Technologies AutoPRO software. Operation of the VeeMAX III can be integrated with the spectrometer software of most FTIR instruments, which allows the operator to precisely and reliably control a wide range of angles of incidence and data collection simultaneously from a computer keyboard. Automated sampling decreases operator error and increases workflow productivity. Other advantages of an Automated VeeMAX III accessory include

- Computer-controlled precision, accuracy and repeatability
- Synchronization of mirror position changes with collection of sample spectra
- Tailor-made, predefined experiments
- "Hands-free" operation



AutoPRO Software configured for the VeeMAX III with automated polarizer.

A spectroelectrochemical cell option for the VeeMAX III is also available. The cell allows for specular experiments using a flat IR window or  $\text{CaF}_2$  prism, where the beam reflects off the working electrode or for ATR experiments where often the ATR crystal serves as the working electrode. Windows and ATR crystals are removable. The electrochemistry cell is equipped with a precision micrometer for electrode positioning.



Electrochemical Cell assembly for VeeMAX III.

## SPECIFICATIONS

Optics	All reflective
Angle of Incidence Range	30 to 80 degrees
Sample Masks	2", 5/8" and 3/8"
Purge Sealing	Purge tubes and purge barb included
Dimensions (W x D x H)	177 x 92 x 162 mm (excludes baseplate)
FTIR Compatibility	Most, specify model and type
Spectroelectrochemical Vessel Dimensions	25 mm dia tapering to 19 mm, 25 mm tall
Spectroelectrochemical Vessel Volume	7.5 mL
Spectroelectrochemical Vessel Material	PTFE or PEEK

## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
013-11XX	VeeMAX III Includes sample masks (2", 5/8" and 3/8"), gold substrate alignment mirror, FTIR base mount, and purge tubes
013-12XX	Automated VeeMAX III Includes controller, cabling, sample masks (2", 5/8" and 3/8"), gold substrate alignment mirror, FTIR base mount, and purge tubes

Note: Replace XX with your spectrometer's Instrument Code. [Click for List >](#)

## VEEMAX III SAMPLING OPTIONS

PART NUMBER	DESCRIPTION
090-1000	Manual Polarizer, ZnSe
090-1200	Manual Polarizer, KRS-5
090-3000	Precision Manual Polarizer, ZnSe
090-3200	Precision Manual Polarizer, KRS-5
090-5000	Precision Automated USB Polarizer, ZnSe
090-5100	Precision Automated USB Polarizer, KRS-5

Note: Automated version includes PIKE Technologies AutoPRO software and controller. More polarizer options are found in the polarizer section of this catalog.

## VEEMAX III REPLACEMENT PARTS

PART NUMBER	DESCRIPTION
013-4010	Specular Mask Set
300-0002	Gold Substrate Alignment Mirror, 1.25 x 3.0"

Note: Please contact PIKE Technologies for items not described in this list.

## SPECTROELECTROCHEMICAL CONFIGURATIONS

PART NUMBER	DESCRIPTION
013-3300	Electrochemical Cell – PTFE
013-3370	Electrochemical Cell – PEEK
160-5527	Prism, $\text{CaF}_2$ , 60 degree
013-3360	Crystal Holder, 60 degree
160-1144	Flat Window, $\text{CaF}_2$ , 20 x 2 mm
160-1304	Flat Window, ZnSe, 20 x 2 mm
013-3320	Flat Window Holder

Notes: The electrochemical configuration requires Electrochemical Cell and VeeMAX III specular reflectance accessory. Must select one or more windows. Choose appropriate window holder. More window types for specular reflectance measurements may be found in our listing of transmission windows, 20 mm x 2 mm. Electrodes supplied by the end-user. See VeeMAX III with ATR product sheet for full ATR crystal and configuration options.