

SYNCHRONOUS SAMPLING DEMODULATORS

SPECTROSCOPY OF THIN FILMS ON METAL SURFACES

Traditional IRRAS

FT-IR spectroscopy combined with reflectance analysis can provide information on chemical structure and molecular orientation of monolayers and other thin films on conductive metal surfaces.

As originally developed, such “Infra-red reflectance-absorbance spectroscopy” (IRRAS) analysis can be compromised by poor sensitivity, weak discrimination against bulk absorption effects, experimental drift, the complexity of reference sample compensation, atmospheric interference, and slow measurement time.



Improved PM-IRRAS

To address the limitations of standard IRRAS measurements, GWC developed the Synchronous Sampling Demodulators (SSDs), which serve as key components of the improved method of Polarization-Modulation IRRAS (PM-IRRAS). At the grazing incident angles used for reflectivity measurements, the *p*-polarized intensity is enhanced so that the differential signal produced by polarization modulation can be demodulated to allow the observation of sub-monolayer quantities of adsorbed chemical species.

GWC’s SSDs are designed for use with the Hinds International Series II ZnSe Photoelastic Modulator (PEM) operating at 50kHz. Incorporating a PEM into the optical beam path of the IRRAS setup on an FT-IR spectrometer increases the sensitivity for polarization sensitive absorption experiments. The resultant spectra provide good discrimination against bulk absorption effects, experimental drift, reference sample compensation, and atmospheric interference, with decreased measurement time.

Vibrational Circular Dichroism (VCD)

SSDs are also useful in the study of chirality using VCD measurements in conjunction with a PEM. Whereas SSDs for PM-IRRAS operate at twice the resonant frequency of the PEM, for VCD measurements the SSDs operate at the resonant frequency. Therefore, for VCD measurements, choose the SSD-50 to match a PEM operating at 50kHz.

Product Details

Item	Catalog Number	Application	Unit
SSD-100	SSD-100	PM-IRRAS	each
SSD-50	SSD-50	VCD	each

To order, please contact your GWC Technologies representative, or contact [GWC Sales](#).

To ask about setting up PM-IRRAS or VCD in your laboratory, please contact GWC Technologies [Technical Support](#) or call 608.441.2720.

www.gwctechnologies.com

info@gwctechnologies.com

608.441.2721

©2006 GWC Technologies

