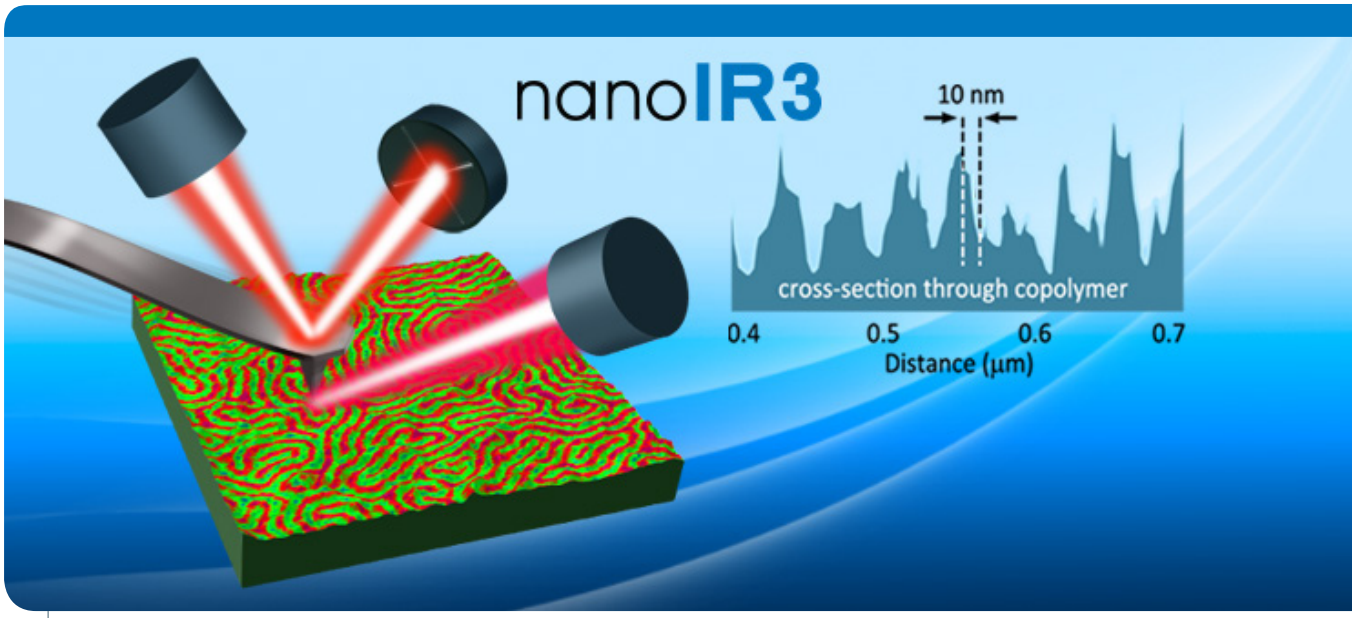
ANASYS INSTRUMENTS
The nanoscale spectroscopy company

BRUKER

The world leader in nanoscale IR spectroscopy



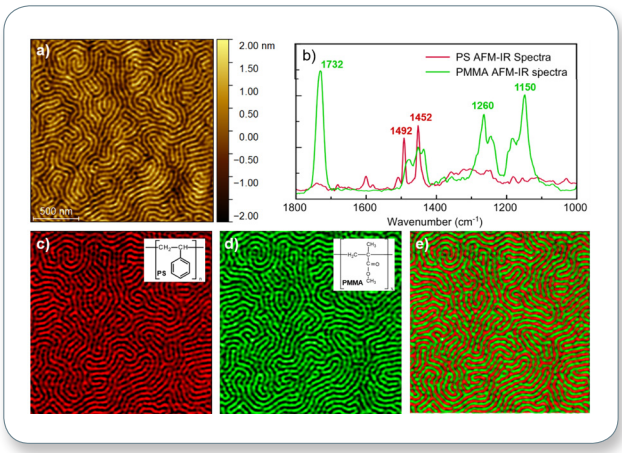
nanoIR3 Nanoscale IR Spectroscopy

- Highest Performance sub-10nm Resolution nanoIR with AFM-IR

Atomic force microscopy-based infrared spectroscopy (AFM-IR) uses an AFM probe to locally detect sample thermal expansion from absorption of infrared radiation. Thus it can provide the spatial resolution of AFM in combination with the chemical analysis and compositional imaging capabilities of infrared spectroscopy. Incorporating proprietary technology and building upon years of industry-leading AFM-IR instrument manufacturing, the new Anasys nanoIR3 is the highest performance nanoscale IR spectroscopy, chemical imaging, and materials property mapping system available today for materials and life science applications.

The nanoIR3 features:

- Tapping AFM-IR for sub-10nm chemical imaging resolution
- HYPERspectra for highest performance nanoscale FTIR spectra
- Nanoscale material property mapping
- Matches industry FTIR databases



Chemical characterization of PS-P2VP block co-polymer sample by Tapping AFM-IR. (a) Tapping AFM height image. (b) Tapping AFM-IR spectra clearly identifying each chemical component. (c) Tapping AFM-IR overlay image highlighting both components (PS@ 1492 and P2VP@ 1588). (d) Profile cross section highlighting the achievable spatial resolution, 10 nm. Sample courtesy of Dr. Gilles Pecastaings and Antoine Segolene at University of Bordeaux.

Tapping AFM-IR sub-10nm chemical imaging

Our new patent-pending Tapping AFM-IR imaging technique creates chemical mapping of the highest spatial resolution combined with high imaging speeds. Whether your goal is creating chemical composition maps of polymers or imaging the smallest, thinnest contaminants or multilayer films, obtaining high-resolution chemical imaging is easy and fast.

HYPERspectra high-speed spectra in seconds

Bruker's HYPERspectra laser technology extends Resonance Enhanced AFM-IR to a wider spectroscopic range (including the OH, C-H stretch and N-H stretch regions). this proprietary technology sets new standards of resolution and sensitivity for a broader range of applications, while still providing unrivalled, direct correlation to FTIR at the nanoscale.

Highest spatial resolution and monolayer sensitivity

Proprietary Tapping AFM-IR and HYPERspectra sets new standards in resolution and sensitivity, achieving sub-10nm spatial resolution while maintaining monolayer sensitivity.

Nanoscale material property mapping

An integrated, fully featured AFM provides unique material property mapping capabilities with thermal, mechanical, and electrical modes to support unique multi-modal characterization of a wide range of materials science and life science applications.

POINTspectra imaging and spectroscopy

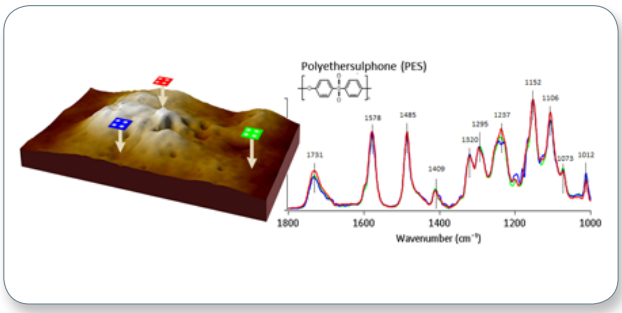
The nanoIR3 also enables IR-based chemical imaging to map chemical variations of features of interest. The unique POINTspectra feature provides both point spectroscopy and chemical imaging with a single laser source, enabling faster time to data and ultimately, a more cost-effective research solution.

Matches Industry FTIR Databases

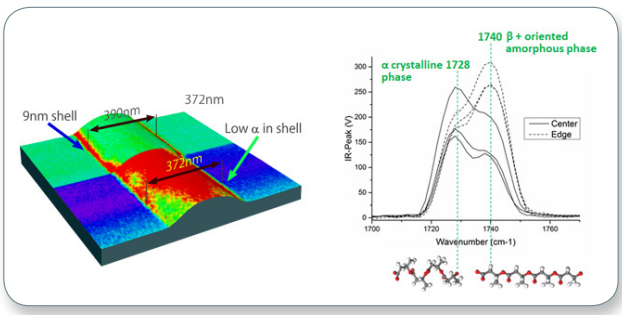
The nanoIR3 provides high-quality IR spectra that can be exported to industry FTIR databases to identify sample components.

Environmental Control

The nanoIR3 provides capability for sample environmental control for temperature, humidity, and various gases.



AFM-IR spectra and IR imaging shows variation of IR signal at different sites.



nanoIR measurements on polymer nano fibers
Courtesy: John Rabolt et al, University of Delaware.

Specifications

Laser tuning range	HYPERspectra: QCL 780–1800 cm^{-1}; FASTspectra OPO: 2710–3600 cm^{-1}; FASTspectra QCL option: 950–1900 cm^{-1}
XYZ scan range	50 µm x 50 µm x 6 µm
Standard imaging modes	Tapping; Phase Imaging; Contact; Lateral Force; Force Curves; Force Modulation; EFM/MFM mode
Standard IR modes	Tapping AFM-IR; FASTmapping; Resonance Enhanced AFM-IR
Optional imaging modes	nanoTA; SThM; CAFM; KPFM; Lorentz Contact Resonance
AFM options	Environmental enclosure; Heater/cooler; Fluid imaging accessory

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