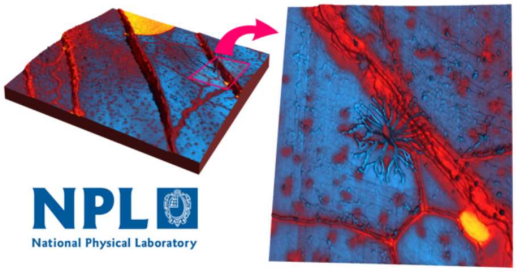
nanoIR Customer Testimonials

"The National Physical Laboratory requires extremely precise and reliable measurements and the nanoIR2-s provided exactly the solution we desired."

"The National Graphene Metrology Centre at NPL will be using the new nano-IR2s system from Anasys Instruments for both nearfield infrared spectroscopy and imaging. Anasys Instruments have been very responsive to our needs and provided exactly the solution we desired. The instrument itself performed out of the box. This level of quality in the technology we use helps NPL provide the most informative and reliable measurement data to our customers."

– Prof. Alexander Tzalenchuk Fellow, National Physical Laboratory, Teddington, UK



Intercalated epitaxial graphene on SiC substrate scattering SNOM absorption image 5um x 5um image

Prof. Hauffman with the nanoIR2-s, Research Group Electrochemical and Surface Engineering, Vrije Universiteit Brussel

"We selected the nanoIR2-s for our research due its novel characterization capability providing high spatial resolution molecular information."

"As a group focusing on the functionalisation of surfaces and their electrochemical interactions, we are always looking for non-traditional techniques combining high lateral resolution with molecular information. Therefore, we selected the nanoIR2-s system because of its capability to combine above mentioned conditions.

We are looking forward using the nanoIR2-s to support research into analysis of hybrid systems, electrolyte uptake, inhomogeneity of semi-conductor surfaces, and we believe that the system will support the characterisation by techniques such as XPS or ToF-SIMS."

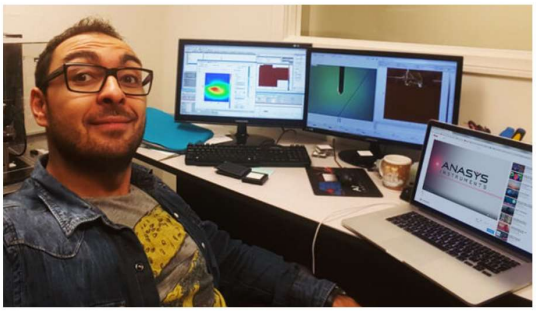
– Prof. Dr. Ir. Tom Hauffman
Research Group Electrochemical and Surface Engineering, Vrije Universiteit Brussel, Brussels, Belgium

"AFM-IR has had a tremendous impact for the nanoscale characterization of heterogeneous biological protein samples"

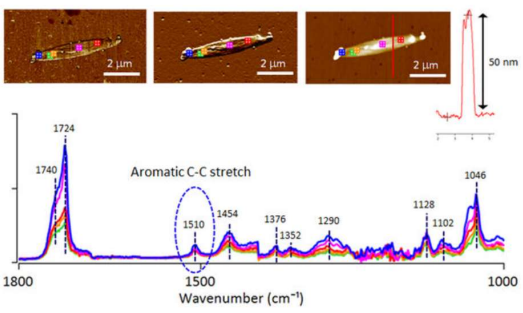
"nanoIR spectroscopy, simultaneously exploiting AFM and infrared spectroscopy, is applied to investigate at the nanoscale the misfolding process and the structure of the amyloid species present during the aggregation process. This information is fundamental for the comprehension of the molecular basis of neurodegenerative disorders."

References: Ruggeri, Scientific Reports, 2016; Ruggeri, Nature Communications, 2015

– Dr. Francesco Simone Ruggeri, Research Fellow, Knowles Lab, University Cambridge, Cambridge, UK



Dr. Ruggeri making his next discovery on the nanoIR2 at the University of Cambridge



Tapping AFM-IR images show lenticular crystals; overall thickness (50 nm) indicates multilayer crystals. Characteristic IR absorption band of PHBHx. The band shape between 1700-1760 cm-1 reveals fairly similar crystallinity at different sites. An absorption band at 1510 cm-1 is also observed, indicating presence of aromatic moiety, not observed for 3.9 mol% sample.
Data courtesy of Rabolt et. al, University of Delaware

"The nanoIR2 is a go-to tool for unique nanoscale IR analysis, and has solved many problems to the delight of our academic and industrial users."

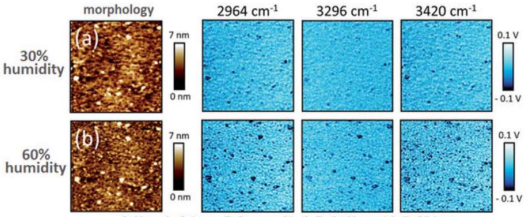
"The University of Delaware purchased the nanoIR2 in a multiuser facility which I manage. Once the instrument was available to my users, it became a go to tool for unique IR analysis. The nanoIR2 has proved to be a very robust platform with great stand-alone AFM capabilities. The user interface is clear and very intuitive, and the software never crashes. Many problems in manufacturing and failure analysis have been solved or identified to the delight of my industrial users. I look forward to many more years of satisfying use of the Anasys nanoIR2".

– Gerald Poirier, Manager, Advanced Materials Characterization Laboratory, University of Delaware

"The nanoIR appears to work like magic! It's AFM-IR technique provides unrivalled access to nanoscale chemical information of relevance to the surface modification of materials. For the first time we have been able to test decades-old hypotheses in surface engineering, corrosion and coatings science with speed, precision and at unprecedented spatial resolution."

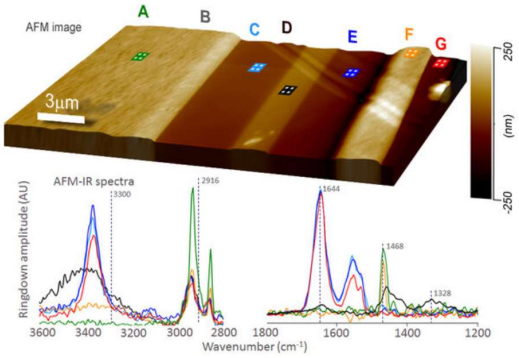
Read the publication: Insights into Epoxy Network Nanostructural Heterogeneity Using AFM-IR

– Prof. Stuart Lyon, AkzoNobel Professor of Corrosion Control, The University of Manchester



S. Morsch, S. Lyon, P. Greensmith, S. D. Smith, and S. R. Gibbon, Faraday Discus., (2015). DOI: 10.1039/c4fd00229f

The AFM-IR technique has been used to map localised water uptake under humid conditions for a model epoxy phenolic coating to understand corrosion mechanisms. The water sorption is enhanced around regions containing residual epoxy groups (less cross-linked) as shown by the chemical images collected at absorption bands for the CH stretch, weakly bound water and strongly bound water.



NanoIR absorbance spectra of multilayer films

Read the publication: Characterization of a polyethylene–polyamide multilayer film using nanoscale infrared spectroscopy and imaging

"Despite no prior AFM experience, we were able to get AFM-IR up and running and to obtain key insights into our multi-layer film samples within a couple of weeks."

"After evaluating the competing technologies for nanoscale chemical composition of polymers, we chose to bring the powerful nanoscale IR spectroscopy (AFM-IR) technology into ExxonMobil. The AFM-IR instrument is easy to use – we were able to get it up and running quickly and to obtain key insights into our samples within a couple of weeks, despite having no prior AFM experience. We liked that nanoIR spectra correlate well to FTIR spectral libraries without peak shifts or distortions that are intrinsic to techniques that measure scattered light."

– Dr. Mauritz Kelchtermans, Project Leader Global Advanced Characterization, ExxonMobil Chemical (Retired)

"The nanoIR2-s provides us great flexibility on various kinds of materials in our lab, especially biological materials."

"nanoIR combines the powerful functions of nanoscale IR spectra and chemical imaging based on two complementary techniques—photothemal AFM-IR and scattering SNOM. This provides us great flexibility on various kinds of materials in our lab (especially biological materials). Its user-friendly interface and easy operation accelerates my projects. The reliable local customer technical support ensures its great performance all the time."

– Professor Hu Tiger Tao, Department of Mechanical Engineering, University of Texas at Austin

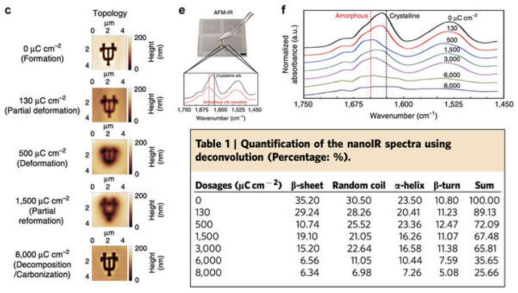


Table 1 | Quantification of the nanoIR spectra using deconvolution (Percentage: %).

Dosages (µC cm^{-2})	β-sheet	Random coil	α-helix	β-turn	Sum
0	35.20	30.50	23.50	10.80	100.00
130	29.24	28.26	20.41	11.23	89.13
500	10.74	25.52	23.36	12.47	72.09
1,500	19.10	21.05	16.26	11.07	67.48
3,000	15.20	22.64	16.58	11.38	65.81
6,000	6.56	11.05	10.44	7.59	35.65
8,000	6.34	6.98	7.26	5.08	25.66

Top left: IR nano-imaging using s-SNOM: the phase contrast between silk and silicon, illustrating the dominant protein structure within the amide I vibration; top middle: spectra of a crystalline silk thin film with embedded amorphous silk nanopatterns of ~30 nm, characterized by AFM–IR,distinguishing nanoscale structural heterogeneity; top right: AFM–IR spectra of electron-induced structural transitions in silk proteins; table 1: quantification of the silk protein secondary structures.
Data courtesy of Tao et. al, DOI: 10.1038/ncomms13079