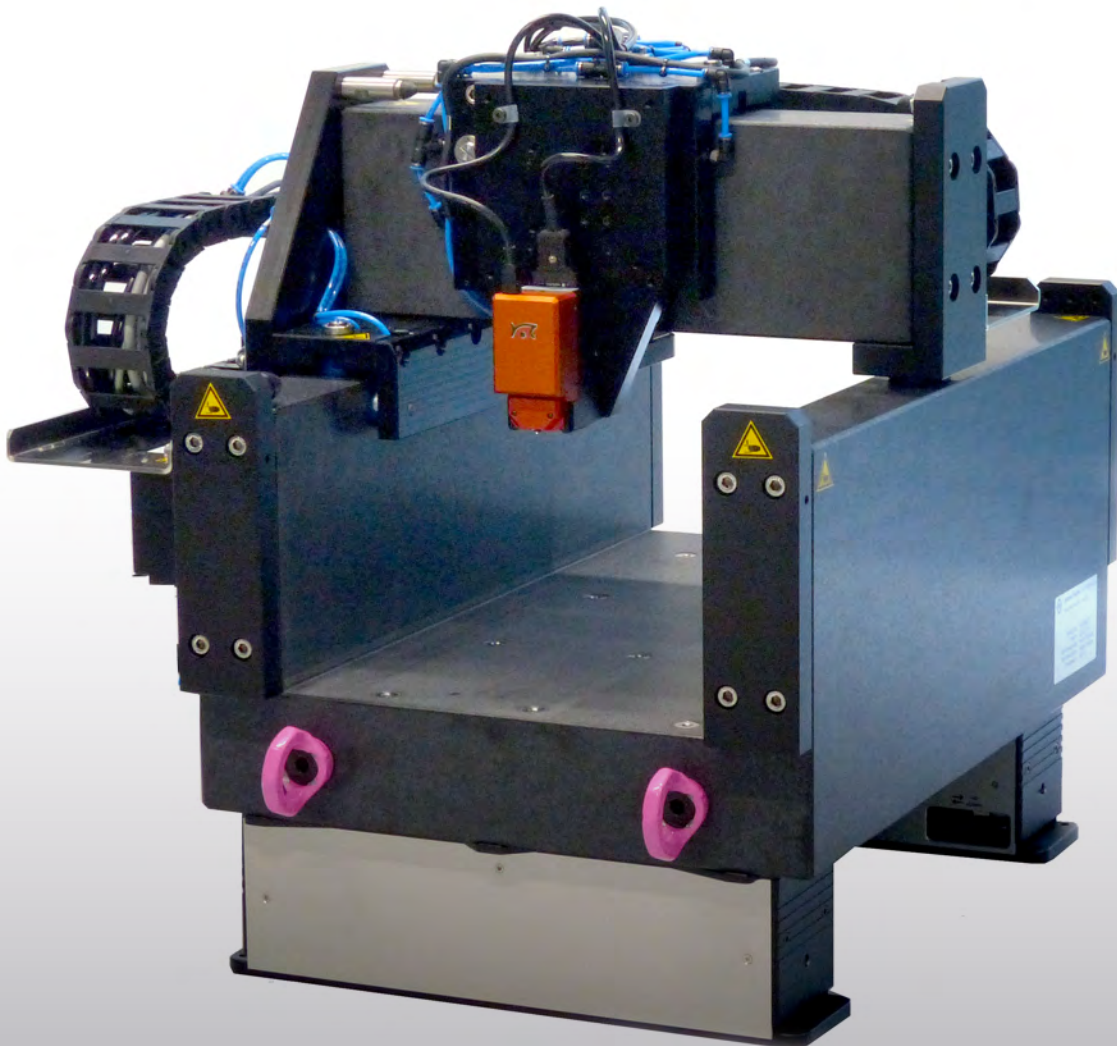


Custom Solutions



AFM Systems Tailored to Your Needs



 Nanosurf®

Customization

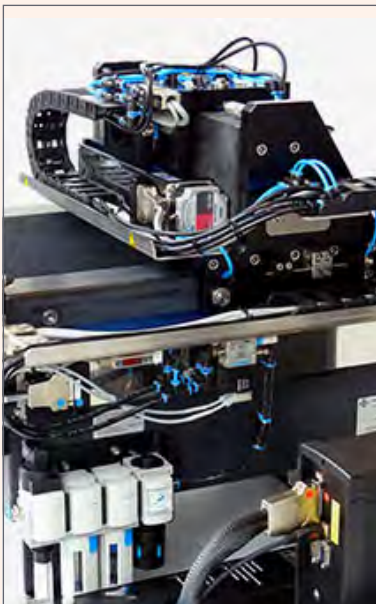
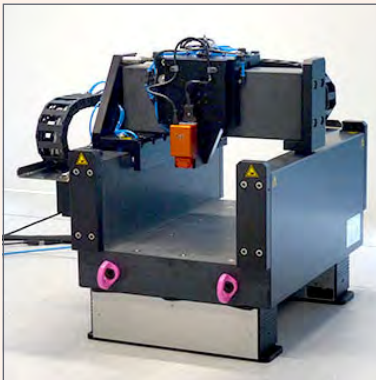
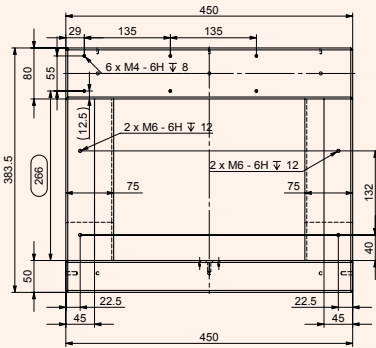
A unique new customer service by Nanosurf

In addition to our standard products for research, industry, and nanoeducation, Nanosurf now offers a unique service that fits right in with our philosophy of being a dedicated, full-range AFM solution provider:

Designing and developing custom-built systems, stages, and parts.

A dedicated team of engineers is ready to discuss your specific application, and to design and produce the optimal solution for you — a system tailored to your exact needs and specifications.

For an impression of what we can do, please see some examples below.



Examples of custom projects

■ Automated XYZ translation stage

With large samples in mind, this high-load, high-precision, and low-noise translation stage pushes the boundaries of sample stage performance. A pneumatic lock/lift mechanism ensures stable measurements when locked and easy travel when lifted. Large travel ranges and heavy-duty integrated active vibration isolation complement the setup. The system was designed for use with the NaniteAFM atomic force microscope.

Specifications and features	
Max. traverse path XYZ:	150 mm; 275 mm; 50 mm
Step size XYZ:	0.5 μ m
Resolution XYZ:	1 μ m
Repositioning accuracy:	$\sigma = 5 \mu$ m
Absolute accuracy:	$\pm 10 \mu$ m
Max. velocity:	n.a.
Sample platform size:	290 \times 550 mm
Sample size:	max. 250 \times 700 \times 175 mm
Sample weight:	max. 150 kg
Stage size:	530 \times 590 \times 470 mm
Stage weight:	130 kg
Stage technology:	Spindle-stepper motors, air bed
Noise level:	< 0.6 \AA (NaniteAFM 10- μ m scan head in quiet environment)

■ Automated XZΘ translation stage

This custom-built translation stage was constructed to allow roughness measurements on large concave and convex samples. It features full 360° manual rotation of the sample platform and automated rotation of the scan head to accommodate the curved form of the various samples. The stage was designed for use with the NaniteAFM atomic force microscope.

Specifications and features

Max. traverse path XZ / Θ:	250 mm; 60 mm / 100 deg
Step size XZ / Θ:	50–1000 nm / 0.16–1.6 mdeg
Resolution XZ / Θ:	0.3 μm / 1 mdeg
Repositioning accuracy XZ / Θ:	$\sigma = 1 \mu\text{m} / \sigma = 3 \text{mdeg}$ ($\sigma = 8 \mu\text{m}$ for all axes combined)
Absolute accuracy:	$\pm 10 \mu\text{m} / \pm 25 \text{mdeg}$
Max. velocity:	13 mm/s
Sample platform size:	Ø400 mm
Sample platform rotation:	360° manually
Sample size:	max. Ø380 mm x 220 mm
Stage size:	450 × 550 × 460 mm
Stage weight:	75 kg
Stage technology:	Piezo stick-slip motors
Noise level:	< 0.5 Å (NaniteAFM 10-μm scan head in quiet environment)

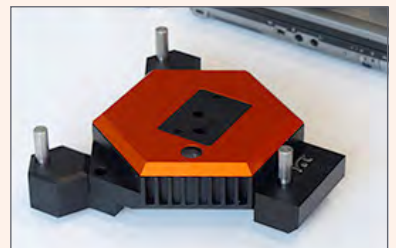


■ Automated XYZΘΦ translation and goniometer stage

This custom stage was tailored for very precise sample alignment and humidity control. Two goniometer stages and three sensors were incorporated to allow levelling of the sample plane with respect to the FlexAFM atomic force microscope. The FlexAFM scan head itself was also modified to match the custom stage dimensions. A custom cantilever holder was developed to allow it to be used for soft lithography.

Specifications and features

Max. traverse path XYZ / ΘΦ:	72 mm; 46 mm; 5 mm / $\pm 5^\circ$
Step size XYZ / ΘΦ:	50–1000 nm / 0.16–1.6 mdeg
Resolution XYZ / ΘΦ:	0.3 μm / 0.3 mdeg
Repositioning accuracy:	$\sigma = 1 \mu\text{m} / \sigma = 1 \text{mdeg}$
Absolute accuracy:	$\pm 10 \mu\text{m} / \pm 20 \text{mdeg}$
Max. velocity:	13 mm/s / 4 deg/s
Sample platform size:	75 × 50 mm
Sample size:	max. 75 × 50 × 13 mm
Sample weight:	max. 150 g
Stage size:	204 × 204 × 132 mm (without environmental control chamber)
Stage weight:	Approx. 5 kg (without environmental control chamber)
Stage technology:	Piezo stick-slip motors





■ Automated XY translation stage with variable Z-range

This custom automated translation stage for the NaniteAFM atomic force microscope was tailored for reproducible placement of samples with a variable thickness.

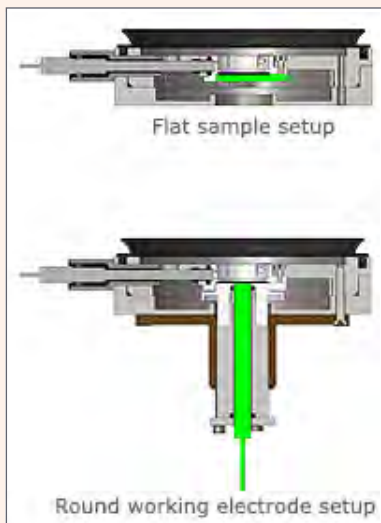
Specifications and features	
Manual Z-travel	30 mm
Max. traverse path XY	32 mm in both directions
Step size XY	50–1000 nm
Resolution XY	0.3 μm
Repositioning accuracy:	$\sigma = 1 \mu\text{m}$
Absolute accuracy:	$\pm 10 \mu\text{m}$
Max. velocity:	13 mm/s
Sample platform size:	63 \times 63 mm
Sample size:	max. 63 \times 63 \times 50 mm
Stage size:	204 \times 204 \times 200 mm
Stage weight:	Approx. 3.5 kg
Stage technology:	Piezo stick-slip motors



■ Manual XY electrochemistry stage

This custom stage was specifically developed to facilitate electrochemical corrosion and deposition AFM studies. It features:

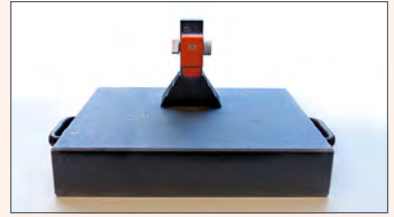
- Inert electrochemical cell embedded in solid steel frame
- Integrated micrometer positioning stage
- Integrated environmental control chamber
- Possibility to use standard round working and reference electrodes
- Possibility to use flat samples for corrosion and deposition studies
- Possibility to purge with inert gasses
- Possibility to exchange electrolyte
- Compatibility with Isostage for active vibration isolation



Specifications and features	
Max. traverse path XY:	2 mm (manual in both directions)
Sample volume:	2 ml (because of inserted cantilever holder)
Working electrode:	<ul style="list-style-type: none"> • Tubular: $\varnothing 0.25'' \times 2-2.5''$ • Flat: 25 \times 25 \times 0.2–2 mm
Reference electrode:	<ul style="list-style-type: none"> • Tubular: $\varnothing 4 \text{ mm} \times 45 \text{ mm}$ • Wire electrodes
Environmental control:	Integrated
Footprint:	204 \times 204 \times 118 mm
Stage weight:	Approx. 6 kg

Manual Z stage on stone table

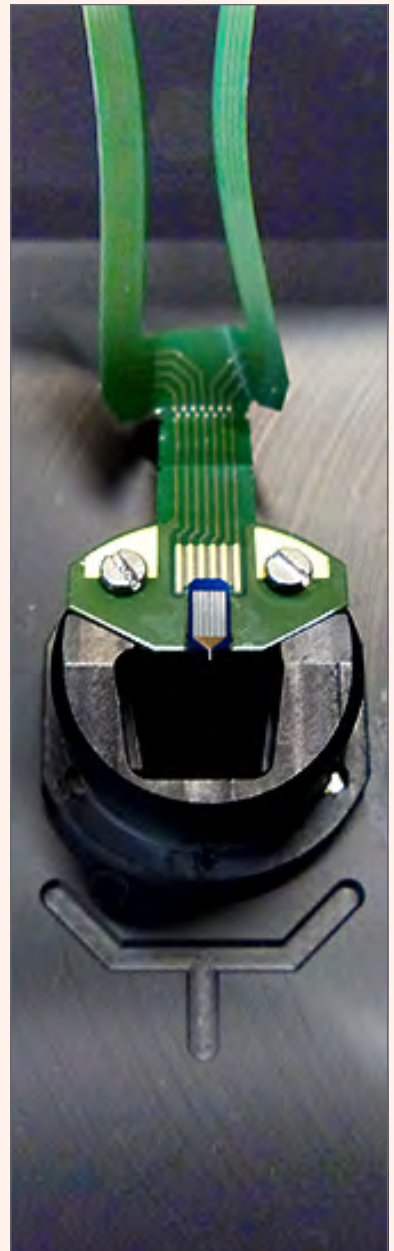
This custom manual translation stage for the NaniteAFM atomic force microscope was tailored for a modularly adjustable height range and large as well as heavy samples. It was constructed to be an affordable, low-noise solution.



Specifications and features	
Max. traverse path Z	30 mm (manual)
Sample size:	max. 500 × 80 × 80 mm
Stage size:	400 × 500 × 300 mm
Stage weight:	57 kg
Noise level:	< 0.5 Å (NaniteAFM 10-µm scan head in quiet environment)

Multifunctional cantilever holder

This custom FlexAFM cantilever holder with flex-print was designed for easy exchange and use of microcontacted smart cantilevers.



Specifications and features	
Static mode AFM:	Enabled
Dynamic mode AFM:	Enabled
Number of electrical contacts:	7 (including ground)
Positioning accuracy:	approx. 50 µm
Cantilever substrate size:	3.0 × 1.5 × 0.65 mm

Custom Solutions

Nanosurf AG
Gräubernstrasse 12–14
4410 Liestal
Switzerland
+41 61 927 47 47 (phone)
+41 61 927 47 00 (fax)
www.nanosurf.com
info@nanosurf.com

Nanosurf GmbH
Rheinstrasse 5
63225 Langen
Germany
+49 6103 202 7163 (phone)
+49 6103 202 7182 (fax)
www.nanosurf.de
info@nanosurf.de

Nanosurf Inc.
300 Trade Center, Suite 5450
Woburn, MA 01801
United States of America
781 549 7361 (phone)
781 549 7366 (fax)
www.nanosurf.com
info@nanosurf.com

Nanosurf 中国中心
Nanosurf China, Shanghai
上海市天宝路578号 (200086)
飘鹰世纪大厦703室, 中国
+86 18621896399 (电话)
+86 21 5512 7698 (传真)
www.nanosurf.com
info@nanosurf.com