



valid from 2022



## UNLIMITED POSSIBILITIES ACCESSORIES HANDBOOK

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Unmatched flexibility & modularity  
More than 100 accessories and 30 operating modes

# Accessories Handbook 2022 Contents

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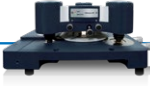


















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# NanoWizard V BioScience and NanoScience

## System Compatibilities

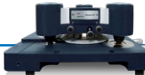
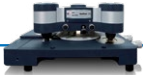

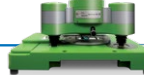




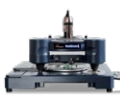











<b>System options</b>	 <b>CellHesion 200</b>	 <b>NanoWizard NanoOptics</b>	 <b>NanoWizard 4 XP</b>	 <b>NanoWizard ULTRA Speed 2</b>	 <b>ForceRobot 300</b>							
<b>Optics accessories</b>	 <b>Upright Fluorescence Microscope kit</b>	<b>Inverted optical microscopes from all major suppliers</b>  Zeiss, Olympus, Nikon, and Leica	 <b>BioMAT</b>	 <b>TopViewOptics with granite base</b>	 <b>TopViewOptics with breadboard</b>	 <b>TopView optical module</b>						
<b>Control electronics options</b>	 <b>Vortis 2.1 SPM Controller</b>		 <b>Vortis 2.1 SPM Controller Speed version</b>		 <b>Vortis 2.1 SPM Controller Advanced option</b>							
<b>Software modules</b>	Advanced AC modes	Advanced Force Spectroscopy	Direct Overlay 2	Direct Tiling	Experiment Control	Experiment Planner	NanoLithography & Nanomanipulation	PeakForce Tapping	QI Advanced	PeakForce QI	Scan Asyst	PeakForce
<b>Sample stages</b>	Head-up stage	 Motorized precision stage	Manual precision stage	Stretching-Stage	 Hybrid Stage	Stretching-Stage for higher forces	Standard stage	 CellHesion module	 TAO module			
<b>Fluid cells &amp; temperature control</b>	BioCell	Coverslip Holder	 PetriDish Heater	PetriDish Heater for BioMAT	High Temperature Heating Stage	Heating Cooling Module	Heating Cooling Stage	CryoStage	PetriDish Holder	SmallCell	3-port small volume SmallCell	
<b>Electrochemistry solutions</b>	Heating Cooling Stage with electrochemistry cell			ECCell electrochemistry cell			Scanning Electrochemical Microscopy (SECM) option					
<b>Application modules &amp; modes</b>	Scanning Tunneling Microscopy module	High-Voltage Sample Bias Amplifier	Low-Voltage Sample Bias	Conductive AFM module	Conductive AFM module - enclosed volume	Tunneling Current Conductive AFM module	Tunneling Current Conductive AFM module - enclosed volume	Kelvin Probe Microscopy module	Kelvin Probe Microscopy module - enclosed volume			
	Tuning Fork module	Akiyama probe module	Coverslip Holder with electrical sample connection	HyperDrive fluid imaging package	Fast scanning package	CellMech Package	Contact Resonance Module	Electrical sample connection module	Scanning Thermal Microscopy module	Sample holder for large samples		
<b>Cantilever holders</b>	 Fixed-spring cantilever holder	Standard cantilever holder		Cantilever holder with electrical tip connection		Cantilever holder with electrical tip connection - enclosed volume		Side-view cantilever holder				
<b>Extras &amp; OEM</b>	FluidFM ADDON from Cytosurge	Humidifier	Micropipettes	ForceWheel	CO <sub>2</sub> Controller	Incubators	Syringe pumps	Potentiostats				
	Fiber coupled detection module	Cameras	Acoustic enclosure	Vibration isolation	Glove Box systems	Indentation solutions	Cantilevers	Small parts and useful tools				
<b>Applications</b>	<b>Life Sciences</b> (highlighted with blue boxes) <ul style="list-style-type: none"> <li>High resolution imaging, in air and liquid, of single molecules such as proteins, DNA/RNA, carbohydrates, lipids</li> <li>Live Cell Imaging</li> <li>Bacteria and virus characterization</li> <li>Cellular adhesion and cytomechanics</li> <li>Molecular interactions, receptor-ligand, antibody-antigen</li> <li>Molecular unfolding</li> <li>Molecular recognition</li> <li>Biomaterials, compound and implant characterization</li> <li>Material properties such as adhesion, elasticity, stiffness</li> <li>Drug formulation, encapsulation and aging studies</li> </ul>					<b>Nano Sciences</b> (highlighted with gray boxes) <ul style="list-style-type: none"> <li>High resolution imaging in air and liquid of single molecules, thin films, nanoparticles or nanowires</li> <li>Characterization of surface properties such as adhesion, stiffness, friction, conductivity, charges, hardness</li> <li>Polymer science</li> <li>Single molecule force measurements</li> <li>Smart organic materials</li> <li>Surface properties of conjugated polymers</li> <li>Biosensors</li> <li>Degradable materials</li> <li>Electrochemistry</li> <li>Colloidal probe, surface forces and interface phenomena</li> </ul>						

# NanoWizard 4 XP BioScience and NanoScience

## System Compatibilities

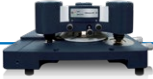
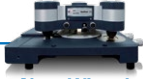


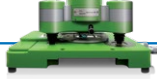




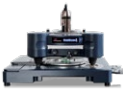










<b>System options</b>	 <b>CellHesion 200</b>		 <b>NanoWizard NanoOptics</b>		 <b>NanoWizard ULTRA Speed 2</b>		 <b>ForceRobot 300</b>					
<b>Optics accessories</b>	 <b>Upright Fluorescence Microscope kit</b>		<b>Inverted optical microscopes from all major suppliers</b>  Zeiss, Olympus, Nikon, and Leica		 <b>BioMAT</b>		 <b>TopViewOptics with granite base</b>		 <b>TopViewOptics with breadboard</b>		 <b>TopView optical module</b>	
<b>Control electronics options</b>	 <b>Vortis 2.1 SPM Controller</b>				 <b>Vortis 2.1 SPM Controller Speed version</b>				 <b>Vortis 2.1 SPM Controller Advanced option</b>			
<b>Software modules</b>	Advanced AC modes	Advanced Force Spectroscopy	Direct Overlay 2	DirectTiling	Experiment Control	Experiment Planner	NanoLithography & Nanomanipulation	PeakForce Tapping	QI Advanced			
<b>Sample stages</b>	Head-up stage	 Motorized precision stage	Manual precision stage	Stretching-Stage	 Hybrid Stage	Stretching-Stage for higher forces	Standard stage	 CellHesion module	 TAO module			
<b>Fluid cells &amp; temperature control</b>	BioCell	Coverslip Holder	 PetriDish Heater	PetriDish Heater for BioMAT	High Temperature Heating Stage	Heating Cooling Module	Heating Cooling Stage	CryoStage	PetriDish Holder	SmallCell	3-port small volume SmallCell	
<b>Electrochemistry solutions</b>	Heating Cooling Stage with electrochemistry cell				ECCell electrochemistry cell				Scanning Electrochemical Microscopy (SECM) option			
<b>Application modules &amp; modes</b>	Scanning Tunneling Microscopy module	High-Voltage Sample Bias Amplifier	Low-Voltage Sample Bias	Conductive AFM module	Conductive AFM module - enclosed volume	Tunneling Current Conductive AFM module	Tunneling Current Conductive AFM module - enclosed volume	Kelvin Probe Microscopy module	Kelvin Probe Microscopy module - enclosed volume			
	Tuning Fork module	Akiyama probe module	Coverslip Holder with electrical sample connection	HyperDrive fluid imaging package	Fast scanning package	CellMech Package	8x Fluidics Module	Contact Resonance Module	Electrical sample connection module	Scanning Thermal Microscopy module	Sample holder for large samples	
<b>Cantilever holders</b>	 Fixed-spring cantilever holder		Standard cantilever holder		Cantilever holder with electrical tip connection		Cantilever holder with electrical tip connection - enclosed volume		Side-view cantilever holder			
<b>Extras &amp; OEM</b>	FluidFM ADDON from Cytosurge	Humidifier	Micropipettes	ForceWheel	CO <sub>2</sub> Controller	Incubators	Syringe pumps	Potentiostats				
	Fiber coupled detection module	Cameras	Acoustic enclosure	Vibration isolation	Glove Box systems	Indentation solutions	Cantilevers	Small parts and useful tools				
<b>Applications</b>	<b>Life Sciences</b> (highlighted with blue boxes) <ul style="list-style-type: none"> <li>High resolution imaging, in air and liquid, of single molecules such as proteins, DNA/RNA, carbohydrates, lipids</li> <li>Live Cell Imaging</li> <li>Bacteria and virus characterization</li> <li>Cellular adhesion and cytomechanics</li> <li>Molecular interactions, receptor-ligand, antibody-antigen</li> <li>Molecular unfolding</li> <li>Molecular recognition</li> <li>Biomaterials, compound and implant characterization</li> <li>Material properties such as adhesion, elasticity, stiffness</li> <li>Drug formulation, encapsulation and aging studies</li> </ul>					<b>Nano Sciences</b> (highlighted with gray boxes) <ul style="list-style-type: none"> <li>High resolution imaging in air and liquid of single molecules, thin films, nanoparticles or nanowires</li> <li>Characterization of surface properties such as adhesion, stiffness, friction, conductivity, charges, hardness</li> <li>Polymer science</li> <li>Single molecule force measurements</li> <li>Smart organic materials</li> <li>Surface properties of conjugated polymers</li> <li>Biosensors</li> <li>Degradable materials</li> <li>Electrochemistry</li> <li>Colloidal probe, surface forces and interface phenomena</li> </ul>						

# NanoWizard ULTRA Speed 2

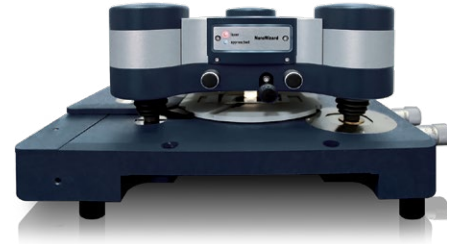
## System Compatibilities





















<b>System options</b>	 CellHesion 200	 NanoWizard NanoOptics	 NanoWizard V	 NanoWizard 4 XP	 ForceRobot 300							
<b>Optics accessories</b>	 Upright Fluorescence Microscope kit	Inverted optical microscopes from all major suppliers  Zeiss, Olympus, Nikon, and Leica	 BioMAT	 TopViewOptics with granite base	 TopViewOptics with breadboard	 TopView optical module						
<b>Control electronics options</b>	 Vortis 2.1 SPM Controller Speed version			 Vortis 2.1 SPM Controller Advanced option								
<b>Software modules</b>	Advanced AC modes	Advanced Force Spectroscopy	Direct Overlay 2	Direct Tiling	Experiment Control	Experiment Planner	NanoLithography & Nanomanipulation	PeakForce Tapping	QI Advanced	PeakForce QI	Scan Asyst	PeakForce
<b>Sample stages</b>	Head-up stage	 Motorized precision stage	Manual precision stage	Stretching-Stage	 Hybrid Stage	Stretching-Stage for higher forces	Standard stage	 CellHesion module	 TAO module			
<b>Fluid cells &amp; temperature control</b>	BioCell	Coverslip Holder	 PetriDish Heater	PetriDish Heater for BioMAT	High Temperature Heating Stage	Heating Cooling Module	Heating Cooling Stage	CryoStage	PetriDish Holder	SmallCell	3-port small volume SmallCell	
<b>Electrochemistry solutions</b>	Heating Cooling Stage with electrochemistry cell			ECCell electrochemistry cell			Scanning Electrochemical Microscopy (SECM) option					
<b>Application modules &amp; modes</b>	Scanning Tunneling Microscopy module	High-Voltage Sample Bias Amplifier	Low-Voltage Sample Bias	Conductive AFM module	Conductive AFM module - enclosed volume	Tunneling Current Conductive AFM module	Tunneling Current Conductive AFM module - enclosed volume	Kelvin Probe Microscopy module	Kelvin Probe Microscopy module - enclosed volume			
	Tuning Fork module	Akiyama probe module	Coverslip Holder with electrical sample connection	HyperDrive fluid imaging package	CellMech Package	Electrical sample connection module	Scanning Thermal Microscopy module	Sample holder for large samples				
<b>Cantilever holders</b>	 Fixed-spring cantilever holder	Standard cantilever holder		Cantilever holder with electrical tip connection		Cantilever holder with electrical tip connection - enclosed volume		Side-view cantilever holder				
<b>Extras &amp; OEM</b>	FluidFM ADDON from Cytosurge	Humidifier	Micropipettes	ForceWheel	CO <sub>2</sub> Controller	Incubators	Syringe pumps	Potentiostats				
	Fiber coupled detection module	Cameras	Acoustic enclosure	Vibration isolation	Glove Box systems	Indentation solutions	Cantilevers	Small parts and useful tools				
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ High-speed and high resolution imaging, in air and liquid, of cells, tissues, proteins, DNA/RNA, carbohydrates or lipids</li> <li>■ Single molecule and live cell dynamics</li> <li>■ Cell kinetics and signaling processes</li> <li>■ Polymers, phase transitions</li> <li>■ Real-time, in situ-experiments simultaneously with advanced optical techniques</li> <li>■ Characterization of surface properties such as adhesion, stiffness, friction, conductivity, charges, hardness</li> </ul>											

# NanoWizard NanoOptics

## System Compatibilities


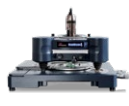












<b>System options</b>	 CellHesion 200		 NanoWizard V		 NanoWizard 4 XP		 ForceRobot 300			
<b>Optics accessories</b>	 Upright Fluorescence Microscope kit	Inverted optical microscopes from all major suppliers <small>Zeiss, Olympus, Nikon, and Leica</small>		 BioMAT	 TopView Optics with breadboard	 TopView optical module	 TopView Optics with granite base	Raman reflector kit		
<b>Control electronics options</b>	 Vortis 2.1 SPM Controller			 Vortis 2.1 SPM Controller Speed version		 Vortis 2.1 SPM Controller Advanced option				
<b>Software modules</b>	Advanced AC modes	Advanced Force Spectroscopy	Direct Overlay 2	Direct Tiling	Experiment Control	Experiment Planner	NanoLithography & Nanomanipulation			
	PeakForceTapping	QI Advanced	PeakForce QI®	ScanAsyst	PeakForce	Data communication kit				
<b>Sample stages</b>	Head-up stage	 Motorized precision stage	Manual precision stage	 Hybrid Stage	Stretching-Stage	Stretching-Stage for higher forces	Standard stage	 CellHesion module	 TAO module	
<b>Fluid cells &amp; temperature control</b>	BioCell	Coverslip Holder	 PetriDish Heater	Heating Cooling Module	Heating Cooling Stage	PetriDish Holder	SmallCell	3-port small volume SmallCell		
<b>Electrochemistry solutions</b>	Heating Cooling Stage with electrochemistry cell			ECCell electrochemistry cell			Scanning Electrochemical Microscopy (SECM) option			
<b>Application modules &amp; modes</b>	Scanning Tunneling Microscopy module	High-Voltage Sample Bias Amplifier	Low-Voltage Sample Bias	Conductive AFM module	Conductive AFM module - enclosed volume	Tunneling Current Conductive AFM module	Tunneling Current Conductive AFM module - enclosed volume	Kelvin Probe Microscopy module	Kelvin Probe Microscopy module - enclosed volume	Tuning Fork module
	Akiyama probe module	Coverslip Holder with electrical sample connection	HyperDrive fluid imaging package	Fast scanning package	CellMech Package	Contact Resonance Module	Electrical sample connection module	Scanning Thermal Microscopy module	Sample holder for large samples	Optical focus tracking
<b>Cantilever holders</b>	 Fixed-spring cantilever holder	Standard cantilever holder		Cantilever holder with electrical tip connection		Cantilever holder with electrical tip connection - enclosed volume		Side-view cantilever holder		
<b>Extras &amp; OEM</b>	FluidFM ADDON from Cytosurge	Humidifier	Micropipettes	ForceWheel	CO <sub>2</sub> Controller	Incubators	Syringe pumps	Potentiostats		
	Fiber coupled detection module	Cameras	Acoustic enclosure	Vibration isolation	Glove Box systems	Indentation solutions	Cantilevers	Small parts and useful tools		
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ Aperture fiber SNOM experiments</li> <li>■ Scattering-type SNOM (sSNOM) experiments</li> <li>■ Nanomanipulation in optical fields</li> <li>■ Optical surface properties such as absorption, excitation or nonlinear effects</li> <li>■ Dyes and markers</li> <li>■ Quantum dots/rods</li> <li>■ Quenching or plasmon generation in combination with topography, nanomechanical, electrical and magnetic properties</li> </ul>									

# NanoWizard Sense+

## System Compatibilities

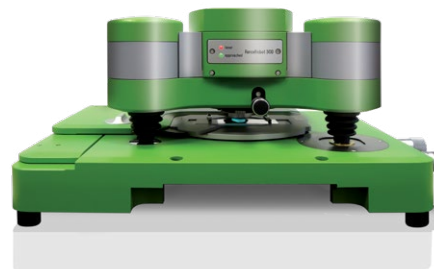










<b>Optics accessories</b>	 BioMAT	 TopViewOptics module	 Upright Fluorescence Microscope kit	Inverted optical microscopes from all major suppliers <small>Zeiss, Olympus, Nikon, and Leica</small>		 TopViewOptics with granite base	 TopViewOptics with breadboard				
<b>Control electronics options</b>	 NanoWizard Sense+ Controller		 Vortis 2.1 SPM Controller		 Vortis 2.1 SPM Controller Advanced option						
<b>Software modules</b>	Advanced Force Spectroscopy	Direct Overlay 2	Direct Tiling	Experiment Control	Experiment Planner	NanoLithography & Nano-manipulation	PeakForce Tapping	Scan Asyst			
<b>Sample stages</b>	Head-up stage	 Motorized precision stage	Manual precision stage	StretchingStage	StretchingStage for higher forces	Standard stage	 CellHesion module				
<b>Fluid cells &amp; temperature control</b>	BioCell	Coverslip Holder	 PetriDish Heater	PetriDish Heater for BioMAT	High Temperature Heating Stage	Heating Cooling Module	Heating Cooling Stage	CryoStage	PetriDish Holder	SmallCell	3-port small volume SmallCell
<b>Electrochemistry solutions</b>	Heating Cooling Stage with electrochemistry cell			ECCell electrochemistry cell			Scanning Electrochemical Microscopy (SECM) option				
<b>Application modules &amp; modes</b>	Scanning Tunneling Microscopy module	High-Voltage Sample Bias Amplifier	Low-Voltage Sample Bias	Conductive AFM module	Conductive AFM module - enclosed volume	TC-AFM module	Tunneling Current Conductive AFM module - enclosed volume	Kelvin Probe Microscopy module			
	Kelvin Probe Microscopy module - enclosed volume	Akiyama probe module	CoverslipHolder with electrical sample connection	CellMech Package	Electrical sample connection module	Scanning Thermal Microscopy module	Sample holder for large samples	Tuning Fork module			
<b>Cantilever holders</b>	 Fixed-spring cantilever holder	Standard cantilever holder		Cantilever holder with electrical tip connection		Cantilever holder with electrical tip connection - enclosed volume		Side-view cantilever holder			
<b>Extras &amp; OEM</b>	FluidFM ADDON from Cytosurge	Humidifier	Micropipettes	ForceWheel	CO <sub>2</sub> Controller	Incubators	Syringe pumps	Potentiostats			
	Cameras	Acoustic enclosure	Vibration isolation	Glove Box systems	Indentation solutions	Cantilevers	Small parts and useful tools	Fiber coupled detection module			
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ High resolution imaging, in air and liquid, of single molecules, cells, tissues, thin films, nanoparticles or nanowires</li> <li>■ Material properties such as adhesion, elasticity, friction, conductivity, hardness</li> <li>■ Single molecule force measurements</li> <li>■ Bacteria and virus characterization</li> <li>■ Cellular adhesion and cytomechanics</li> <li>■ Surface properties of conjugated polymers</li> <li>■ Degradable materials</li> </ul>										



# ForceRobot 300

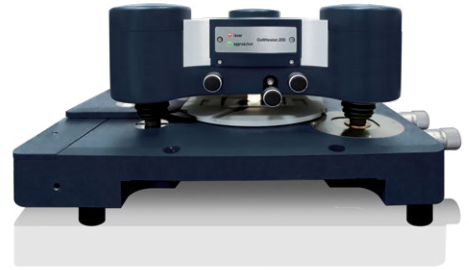
## System Compatibilities












<b>Optics accessories</b>	<p><b>Inverted optical microscopes from all major suppliers</b> (Zeiss, Olympus, Nikon, and Leica)</p>							
<b>Control electronics options</b>	 <p><b>ForceRobot 300 Controller</b></p>		 <p><b>Vortis 2.1 SPM Controller</b></p>		 <p><b>Vortis 2.1 SPM Controller Advanced option</b></p>			
<b>Software modules</b>	Advanced Force Spectroscopy	Direct Overlay 2	Direct Tiling	Experiment Control	Experiment Planner			
<b>Sample stages</b>	 <p>Manual precision stage</p>		 <p>Motorized precision stage</p>		 <p>Precision Mapping Stage</p>			
<b>Fluid cells &amp; temperature control</b>	BioCell	Coverslip Holder	 <p>PetriDish Heater</p>	High Temperature Heating Stage	Heating Cooling Stage	PetriDish Holder	SmallCell	3-port small volume SmallCell
<b>Application modules &amp; modes</b>	ForceWheel				CellMech Package			
<b>Cantilever holders</b>	 <p>Fixed-spring cantilever holder</p>			Standard cantilever holder				
<b>Extras &amp; OEM</b>	FluidFM ADDON from Cytosurge	Humidifier	Micropipettes	CO <sub>2</sub> Controller	Incubators	Syringe pumps		
	Cameras	Acoustic enclosure	Vibration isolation	Glove Box systems	Cantilevers	Small parts and useful tools		
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ Protein (un)folding and receptor-ligand interactions</li> <li>■ Analysis of adhesion forces of single macromolecules for surface chemistry and polymer science</li> <li>■ Elastic response or melting of DNA</li> <li>■ Single molecule mechanical properties, e.g. muscle proteins, synthetic biopolymers, carbohydrates or spider silk protein</li> <li>■ Localization of binding of small molecules to proteins (e.g. inhibitors on membrane proteins)</li> <li>■ Quantification of kinetics, affinity and energy landscapes of biological interactions</li> <li>■ Colloidal probe and Nanoindentation experiments</li> </ul>							

# CellHesion 200

## System Compatibilities



<b>Optics accessories</b>	 <p><b>Upright Fluorescence Microscope kit</b></p>	 <p><b>TopView Optics with granite base</b></p>	<p><b>Inverted optical microscopes from all major suppliers</b> (Zeiss, Olympus, Nikon, and Leica)</p>				
<b>Control electronics options</b>	 <p><b>CellHesion 200 Controller</b></p>	 <p><b>Vortis 2.1 SPM Controller</b></p>	 <p><b>Vortis 2.1 SPM Controller Advanced option</b></p>				
<b>Software modules</b>	<p>Advanced Force Spectroscopy</p>	<p>Direct Overlay 2</p>	<p>Direct Tiling</p>	<p>Experiment Control</p>	<p>Experiment Planner</p>	<p>CellMech Package</p>	
<b>Sample stages</b>	 <p><b>HybridStage</b></p>			 <p><b>Motorized precision stage</b></p>			
<b>Fluid cells &amp; temperature control</b>	<p>BioCell</p>	<p>Coverslip Holder</p>	 <p><b>PetriDish Heater</b></p>	<p>Heating Cooling Stage</p>	<p>PetriDish Holder</p>	<p>SmallCell</p>	<p>3-port small volume SmallCell</p>
<b>Cantilever holders</b>	 <p><b>Fixed-spring cantilever holder</b></p>		<p>Standard cantilever holder</p>		<p>Side-view cantilever holder</p>		
<b>Extras &amp; OEM</b>	<p>FluidFM ADDON from Cytosurge</p>	<p>Humidifier</p>	<p>Micropipettes</p>	<p>ForceWheel</p>	<p>CO<sub>2</sub> Controller</p>	<p>Incubators</p>	<p>Syringe pumps</p>
	<p>Cameras</p>	<p>Acoustic enclosure</p>	<p>Vibration isolation</p>	<p>Glove Box systems</p>	<p>Cantilevers</p>	<p>Small parts and useful tools</p>	
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ Stiffness and elasticity mapping on samples ranging from single cells to substrates and tissues</li> <li>■ Cell-cell and cell-substrate interactions</li> <li>■ Cell adhesion and tether formation</li> <li>■ Biomaterial studies, biofouling, biosensors, capsules</li> <li>■ Implant coatings and cellular biochips</li> <li>■ Automated mapping of sample properties over a large range for structured substrates, microspheres, cells. etc., together with the HybridStage</li> <li>■ Testing functionalized surfaces</li> <li>■ Applications in microbiology and virus research</li> <li>■ Pharmaceutical studies such as drug delivery mechanisms</li> <li>■ Applications in food, paper or textile industry on fibers, coatings or powders in air or liquid</li> <li>■ Binding studies such as receptor/ligand or antibody/antigene</li> </ul>						

# 1 Control electronic options

## CellHesion 200 Controller

Compact control electronics for CellHesion 200 systems

### Key features

- TTL output for synchronization of external equipment (e.g. CCD cameras)



## ForceRobot 300 Controller

Compact control electronics for ForceRobot 300 systems

### Key features

- Fully digital data processing and measurement control
- Modular design with dual core PowerPC@1.4GHz and high-speed FPGA for superior performance
- High-speed 16bit ADCs@60MHz
- Precision 4x20bit DACs for piezo control
- Software-controlled toggle of the z-piezo voltage for optimum resolution



## NanoWizard Sense+ Controller

Full featured, low-noise, high performance, digital SPM controller for NanoWizard Sense+ systems

### Key features

- Modular hybrid analog/digital design with latest FPGA/PPC technology (dual core PowerPC@1.4GHz). Overcomes limitations of conventional DSP designs
- 2x high-speed 16bit ADC channels with 60MHz sample rate
- 6x 18bit ADC channels with 1 MHz sample rate
- 1x high-speed 14bit DAC channel with 120MHz sample rate
- 4x20bit DAC channels with 1 MHz sample rate
- 1x high-speed lock-in amplifier for precise amplitude and phase detection
- 3 channel, low noise, capacitive distance sensor interface
- Thermal noise cantilever calibration up to 2 MHz
- Easy Connection of accessories at the front panel



## Vortis 2.1 SPM Controller

Full featured, low-noise, high-performance, digital SPM controller

### Key features

- High-speed data capture with a maximum data pixel rate of up to 1.000.000 pixels/sec
- Modular, hybrid analog/digital design with latest FPGA/PPC technology (dual core PowerPC@1.4GHz). Overcomes limitations of conventional DSP designs
- 2x high-speed 16bit ADC channels with 60MHz sample rate
- 6x 18bit ADC channels with 1 MHz sample rate
- 1x high-speed 14bit DAC channel with 120MHz sample rate
- 4x20bit DAC channels with 1 MHz sample rate
- 1x high-speed lock-in amplifier for precise amplitude and phase detection
- 3 channel, low noise, capacitive distance sensor interface
- Thermal noise cantilever calibration up to 7.5MHz
- Low voltage output for electronic modules and pre-amplifiers with +/-15V and +/-5V
- Digital input: 6 channels (Sub-D) Digital output: 10 channels (Sub-D) e.g. for pixel and line clock
- Easy connection of accessories at the front panel



# 1 Control electronic options



## Vortis 2.1 SPM Controller Speed version

Most advanced and flexible high-performance digital SPM controller

### Key features

- Access to external and internal signals for flexible research and easy combining of additional advanced optical instrumentation (e.g. SuperResolution, FLIM)
- High-speed data capture with maximum data pixel rate of up to 1.000.000 pixels/sec
- Modular, hybrid, analog/digital design with latest FPGA/PPC technology (dual core PowerPC@1.4GHz). Overcomes limitations of conventional DSP designs
- 4 × high-speed 16bit ADC channels with 60MHz sample rate
- 12 × 18bit ADC channels with 1 MHz sample rate
- 6 × high-speed 14bit DAC channel with 120MHz sample rate
- 8 × 20bit DAC channels with 1 MHz sample rate
- 2 × high-speed lock-in amplifiers for precise amplitude and phase detection
- 6 channel, low noise, capacitive distance sensor interface
- Two channel, gated photon counting (2+2 inputs, 32bit TTL counters, up to 20Mcounts/s, 20ns min pulse width, 40ns pulse separation)
- Thermal noise cantilever calibration up to 7.5MHz
- Low voltage output for electronics modules and pre-amplifiers with +/- 15V and +/- 5V
- Digital input: 6 channels (Sub-D) Digital output: 10 channels (Sub-D) e.g. for pixel and line clock
- Easy connection of accessories at the front panel



## Vortis 2.1 SPM Controller Advanced option

Most advanced and flexible high-performance digital SPM controller

### Key features

- Access to external and internal signals for flexible research and easy combining of additional advanced optical instrumentation (e.g. SuperResolution, FLIM)
- High-speed data capture with maximum data pixel rate of up to 1.000.000 pixels/sec
- Modular, hybrid, analog/digital design with latest FPGA/PPC technology (dual core PowerPC@1.4GHz). Overcomes limitations of conventional DSP designs
- 4 × high-speed 16bit ADC channels with 60MHz sample rate
- 12 × 18bit ADC channels with 1 MHz sample rate
- 6 × high-speed 14bit DAC channel with 120MHz sample rate
- 8 × 20bit DAC channels with 1 MHz sample rate
- 2 × high-speed lock-in amplifiers for precise amplitude and phase detection
- 6 channel, low noise, capacitive distance sensor interface
- Two channel, gated photon counting (2+2 inputs, 32bit TTL counters, up to 20Mcounts/s, 20ns min pulse width, 40ns pulse separation)
- Thermal noise cantilever calibration up to 7.5MHz
- Low voltage output for electronics modules and pre-amplifiers with +/- 15V and +/- 5V
- Digital input: 6 channels (Sub-D) Digital output: 10 channels (Sub-D) e.g. for pixel and line clock
- Easy connection of accessories at the front panel

## 2 System options

### NanoWizard V

#### for automated nano-mechanical imaging and fastest scanning of corrugated samples

The NanoWizard V BioScience and NanoScience atomic force microscopes combine high spatio-temporal resolution with a large scan area and enable long-term, self-regulating experiment series. (see NanoWizard V brochures)

##### Key features

- Tip-scanner technology for safe and easy operation in air, gases, and fluids
- Full transmission optical capabilities with standard condenser; e.g. bright field, phase contrast, Hoffman modulation or DIC simultaneous to AFM imaging with inverted research microscopes
- Advanced optical techniques simultaneous to AFM like FRET, TIRF, FLIM, FCS, single molecule detection, epi-fluorescence or confocal laser scanning (CLSM) with optional optical microscopes
- Simultaneous operation with optical super-resolution techniques like STED, STORM/PALM and SIM
- DirectOverlay 2 feature for perfect combination of AFM and optical microscopy
- Open hard and software architecture
- Optimum performance by active vibration isolation table
- Comprehensive set of AFM modes like Bruker's unique PeakForce-QI software mode, PeakForce Tapping, Quantitative (QI) Imaging mode, ScanAsyst and PeakForce QNM, contact mode with lateral force, advanced AC modes like non-contact, phase detection, and accessories for the characterization of electrical and magnetic properties, including state-of-the-art FluidFM cantilevers for cell injection and manipulation



### NanoWizard 4 XP

#### for high-resolution imaging with extreme performance

The NanoWizard 4 XP BioScience and NanoScience atomic force microscopes combine atomic resolution and fast scanning with rates of up to 150 lines/sec and a large scan range of 100  $\mu\text{m}$  in one system. (see NanoWizard 4 XP brochures)

##### Key features

- Tip-scanner technology for safe and easy operation in air, gases, and fluids
- Full transmission optical capabilities with standard condenser; e.g. bright field, phase contrast, Hoffman modulation or DIC simultaneous to AFM imaging with inverted research microscopes
- Simultaneous operation with advanced optical techniques like FRET, TIRF, FLIM, FCS, single molecule detection, epi-fluorescence or confocal laser scanning (CLSM) with optional optical microscopes
- Simultaneous operation with optical superresolution techniques like STED, STORM/PALM and SIM
- DirectOverlay 2 feature for perfect combination of AFM and optical microscopy
- Open hard and software architecture
- Comprehensive set of AFM modes like Bruker's exclusive PeakForce Tapping, JPK's real force curve based QI mode, contact mode with lateral force, advanced AC modes like non-contact, phase detection, and accessories for the characterization of electrical and magnetic properties, including state-of-the-art FluidFM cantilevers for cell injection and manipulation



### NanoWizard ULTRA Speed 2

#### for high-speed AFM combined with advanced optical microscopy

The NanoWizard ULTRA Speed 2 AFM combines true atomic resolution and fastest scanning with rates of 10 frames/sec. (see NanoWizard ULTRA Speed 2 brochure)

##### Key features

- High-speed imaging at 10 frames/sec with excellent resolution for tracking dynamic processes
- Comes with Bruker's exclusive PeakForce Tapping and JPK's real force curve based QI mode for easy imaging
- Atomic resolution in closed-loop mode as a result of lowest scanner, position-sensor and detection-system noise level
- NestedScanner feature for fast tracing of high features
- Unique integration with optical microscopy as a result of tip-scanning design and DirectOverlay 2 feature for most precise correlative microscopy
- Highest flexibility and upgradeability with a broad range of modes and accessories



## 2 System options



### NanoWizard NanoOptics

#### 1) with fiber port for fiber SNOM experiments

#### 2) UV transparency for top-down illumination

The NanoWizard NanoOptics AFM head is optimized for a broad range of applications ranging from nanoscale optical imaging by aperture and scattering-type SNOM to experiments involving interactions of light with the sample such as absorption, excitation, nonlinear effects and quenching. (see NanoWizard NanoOptics brochure)

#### Key features

- Comprehensive solutions for AFM and Raman spectroscopy, Tip-Enhanced Raman Spectroscopy (TERS), Aperture SNOM and Scattering-type SNOM (sSNOM), Confocal microscopy, NanoManipulation in optical fields
- Compatible with most commercially available inverted research microscopes (Zeiss Axiovert and Axio Observer lines, Nikon TE and Ti lines, Olympus IX line and Leica DMI/DMi lines)
- Unique integration with optical microscopy thanks to tip and sample scanning design, DirectOverlay 2 mode, smart engineering
- Seamless integration with inverted microscopes, Raman spectrometers, photon counting systems
- 980nm laser source for detection of cantilever deflection prevents cross talk with other wavelengths
- Wide range of operation modes and accessories such as Tuning Fork, STM, Conductive AFM, Fiber SNOM



### NanoWizard Sense+

#### for exceptional flexibility & modularity with proven NanoWizard technology

The NanoWizard Sense+ is a high-quality, entry level AFM, that enables AFM imaging with excellent resolution and highest mechanical and thermal stability, even on an inverted optical microscope. (see NanoWizard Sense+ brochure)

#### Key features

- Tip-scanner technology for safe and easy operation in air, gases, and fluids
- JPK's DirectOverlay 2 feature for perfect combination of AFM and optical microscopy
- Supports Bruker's exclusive PeakForce Tapping
- Outstanding flexibility with a broad range of modes and accessories for the characterization of mechanical, electrical, optical, magnetic and chemical sample properties, including state-of-the-art FluidFM cantilevers for cell injection and manipulation
- Can be easily upgraded to a full NanoWizard 4 XP AFM system

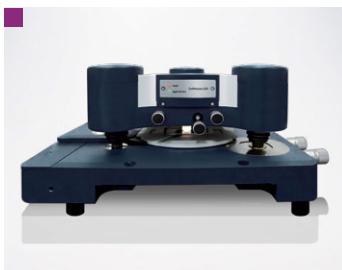


### ForceRobot 300

The innovative force spectroscope with fully automated workflow. Collects more than 80,000 force curves within 24h while varying parameters such as temperature or loading rate. (see ForceRobot 300 brochure)

#### Key features

- Fully automated force spectroscope with highest flexibility
- Cutting edge force spectroscopy and force mapping in combination with single molecule fluorescence
- Automated laser and detector alignment
- Automated cantilever drift compensation
- Advanced and dedicated software with ExperimentPlanner, RampDesigner and built-in data batch processing
- Compatible with the Vortis 2.1 controller



### CellHesion 200

The single cell force testing solution for cell adhesion and elasticity studies. Specialized platform for cell adhesion and cell mechanics measurements for samples ranging from single molecules to entire cells. (see CellHesion 200 brochure)

#### Key features

- Cantilever sensor lifting system with 100µm +15µm travel range with closed-loop control thanks to high-speed capacitive sensor feedback
- Integrates with advanced optical imaging (DIC, CLSM, TIRF, FRET...)
- Compatible with the Vortis 2.1 controller

# 3 Software modules

## PeakForce Tapping software module

Enables easy imaging without any expert knowledge

### Key features

- Imaging mode with lowest interaction forces for the widest range of samples
- Lowest forces for preserving probe quality
- Easy to Use for brilliant results
- **FAST version available with more than 5x faster imaging**

## ScanAsyst software module

for automatic adjustment of scanning parameters

### Key features

- Compatible with PeakForce Tapping® and PeakForce-QI software modules

## PeakForce QNM

for capturing force curves from PeakForce Tapping and PeakForce-QI

### Key features

- Data analysis methods to extract nanomechanical properties
- Scripting capabilities for customized fit routines

## ExperimentControl

Remote control and monitoring of complex and long-term experiments

### Key features

- Simplifies setting up the instrument, in particular, inside an acoustic hood
- Continuous status update of the instrument
- Tablet with holder is included
- Remote control and monitoring of complex and long-term experiments via the internet by a PC, tablet or smartphone

## ExperimentPlanner

Allows customized experimental procedures, including control of external equipment

### Key features

- Full access to imaging and force spectroscopy functions
- Control of fluidics, temperature, position (requires motorized stage), camera image acquisition etc.
- Convenient program editor with extensive online help and loading/saving of plans

## QI Advanced software module

For NanoWizard systems; delivers quantitative mechanical properties

### Key features

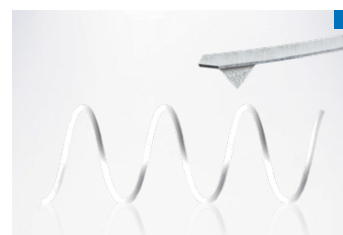
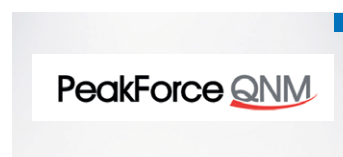
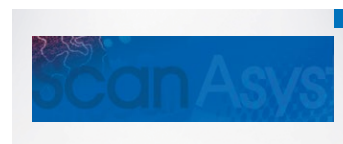
- Any kind of sample can be imaged: samples with steep edges, loosely attached samples, soft, sticky and brittle samples
- Works under ambient conditions and in fluid
- Quick to learn and easy to operate
- Provides additionally adhesion, stiffness and dissipation data while scanning
- Depending on application, it can also deliver electrical conductivity or molecular recognition in a single scan
- Contact Point Imaging (CPI) mode for extremely soft and inhomogeneous surfaces
- QI Advanced imaging mode for conductive measurements in combination with the JPK CAFM module

## Advanced AC modes module

Software module for NanoWizard systems

### Key features

- Comprehensive range of advanced dynamic feedback modes
- Phase Modulation (PM), Frequency Modulation (FM) or self-excitation FM
- Modes can be combined with Amplitude Gain Control (AGC) and Q-Control
- Higher harmonics with extra lock-in amplifier
- Requires cantilever holder with DirectDrive capability



# 3 Software modules

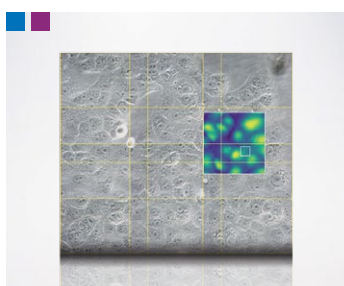


## DirectOverlay 2 module

Perfect integration of optical and AFM data; JPK's proprietary and patented solution for perfect overlay of optical and AFM information

### Key features

- Perfect overlay of optical and AFM data with sub-diffraction limit precision
- Direct "in optical image" selection of AFM measurements (imaging and force curves)
- Dramatic reduction of overview image scanning in AFM, giving faster results & lower tip contamination
- Optical image navigation to specific regions of interest, even without AFM scanning. This protects functionalized tips for molecular recognition, avoids tip passivation from image scanning before the force measurements.

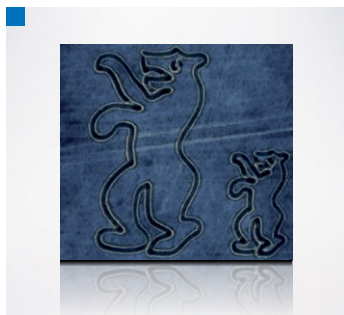


## DirectTiling software module

Provides a clear visual overview, allowing a fast setup of optically guided experiments.

### Key features

- Improved user-friendly workflow
- Large range tiling of optical images
- Allows easy navigation of extended scan-ranges
- Automated mapping of large sample areas
- Requires the DirectOverlay 2 software module
- Only compatible with Motorized Precision Stage or HybridStage



## NanoLithography/NanoManipulation module

Software module for NanoWizard systems

### Key features

- Moving objects or scratching the surface with controlled force
- Free hand, vector-based patterns possible
- Pattern creation by electrical current such as anodic oxidation

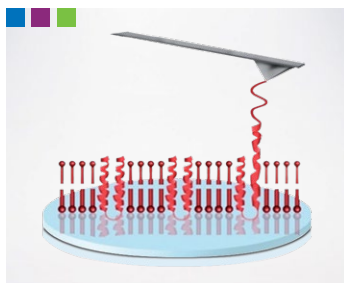


## CellMech Package

For viscoelastic property measurements of gels, cells, and tissues

### Key features

- Sine modulation measurements at defined frequencies can be freely combined with customized force curves or force mapping
- MicrorheologyAssistant for setting up modulation experiments with defined frequencies over large ranges (0.5-500Hz)
- One-click calibration of sensitivity and spring constant for all kinds of cantilever
- Specifically designed probes with defined radii and pre-calibrated spring constant
- Precise optical navigation and correlative experiments using the NanoWizard BioAFM family with optical microscopy and in combination with optional DirectOverlay or DirectTiling features



## Advanced Force Spectroscopy module

For advanced force measurement experiments ranging from single protein unfolding, and DNA stretching to probing of cells and tissue

### Key features

- Integrated RampDesigner for user-defined segmentation of force curves
- Advanced force clamp
- Tuneable frequency sweep from 0.1 to 10kHz
- Setting of user-defined patterns for rheology applications



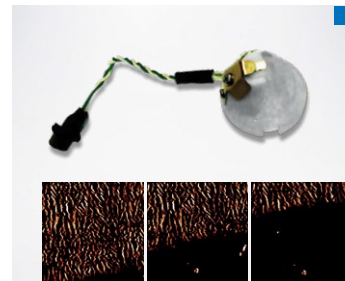
# 4 Application modules and modes

## Fast scanning package

Fast scanning option for NanoWizard V and NanoWizard 4 XP

### Key features

- Scan speed up to 400 lines/second (NW V) and 300 lines/second (NW 4 XP)
- Includes PeakForce Tapping – FAST version
- Ultra stable JPK DirectDrive cantilever excitation for dynamic modes
- > 70kHz z-scanner resonance frequency
- Software upgrade for fast scanning modes
- Fast data acquisition
- Includes NestedScanner feature for fast tracing of high features



## HyperDrive imaging package

For highest resolution imaging of soft samples in air and liquid

### Key features

- Designated cantilever holder with built-in oscillation excitation
- Works with standard intermittent-contact mode cantilevers
- Low dynamic forces (<50pN). Small oscillation amplitudes in water (< 1 nm) enable sub-nm resolution.
- HyperDrive operating software module
- HyperDrive starter kit includes 5 cantilevers
- Supports FM-AFM and self-excitation FM-AFM
- For aqueous solutions and temperatures up to 60 °C



## OEM micropipettes\*

JPK offers a micropipette system, e.g. CellTram® models from Eppendorf, together with NanoWizard or CellHesion 200 systems.

\*Optical microscope and NanoWizard head are not included

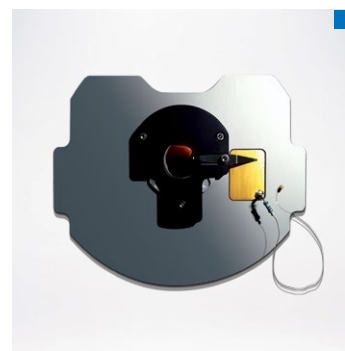


## CoverslipHolder with electrical sample connection

For electrical measurements such as Conductive AFM or STM on a coverslip in combination with high NA optics

### Key features

- For Life Science stage
- Compatible with JPK modules like CAFM (also enclosed volume), STM, KPM, and PFM
- Bottom access for high numerical aperture optical imaging
- Sample size up to 25×25 mm and 0-1 mm thickness
- Includes two sample mounting frames:
  - Bolt-down frame with silicone seal for dry operation or aqueous solutions
  - Low profile frame for dry operation with improved optical accessibility and three contact clamps
- Electrical connection from sample topside



## Kelvin Probe Microscopy (KPM) module

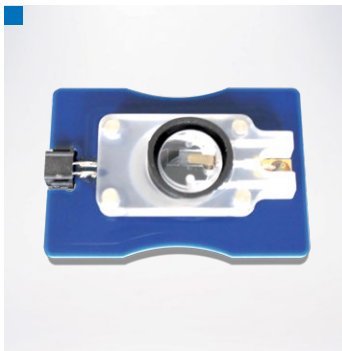
Option for nanoscale mapping of surface potential distribution

### Key features

- Surface Potential Mapping
- Cantilever Holder with electrical tip connection included
- One-pass and two-pass operation possible
- Software interface



## 4 Application modules and modes



### Kelvin Probe Microscopy (KPM) module – enclosed volume

For nanoscale mapping of surface potential distribution under controlled environmental conditions

#### Key features

- Surface Potential Mapping
- Cantilever Holder with electrical tip connection included
- One-pass and two-pass operation possible
- Software interface



### Conductive AFM module

For high-performance conductivity experiments

#### Key features

- Tip-bias cantilever holder with integrated current amplifier circuit and automatic sample grounding
- Sample holder for conductive samples (optional transparent sample holder)
- Bias Voltage +/- 10V
- Current Range: +/- 100nA
- Gain: 100V/ $\mu$ A
- Optimized cantilever exchange tool
- Software interface
- 10 $\times$  Bruker SCM-PIT-V2 cantilever
- Compatible with all stages except Cryo- and StretchingStage



### Conductive AFM module – enclosed volume

For high-performance conductivity experiments under controlled environmental conditions

#### Key features

- Tip-bias cantilever holder with integrated current amplifier circuit
- SmallCell-based, closed volume cell with < 140 $\mu$ l volume and connections for perfusion/gas flow
- Bias Voltage +/- 10V
- Current Range: +/- 100nA
- Gain: 100V/ $\mu$ A
- Sample holder for conductive samples (optional transparent sample holder)
- Optimized cantilever exchange tool
- Software interface
- Compatible with all stages except Cryo- and StretchingStage



### Contact Resonance Module

Enables quantitative characterization of nanomechanical properties up to 300GPa based on contact resonance imaging.

#### Key features

- Seamless integration with all life science stages
- Enables PLL-based imaging and resonance sweep-based force mapping
- Tailored software package for easy, step-by-step data acquisition and analysis
- Sample size up to 15 mm in diameter and 10 mm thick
- Includes:
  - Sample holder with integrated ultrasonic transducer
  - Test and reference samples
  - A set of probes with diamond-like carbon coating

# 4 Application modules and modes

## Tunneling Current Conductive AFM (TC-CAFM) module

For low-conducting samples

### Key features

- Tip-bias cantilever holder with integrated current amplifier circuit and automatic sample grounding
- Sample holder for conductive samples (optional transparent sample holder)
- Optimized cantilever exchange tool
- Bias Voltage +/- 10V
- Current Range: +/- 10nA
- Gain: 1000V/ $\mu$ A
- Noise limit 100fA RMS
- Software interface
- Compatible with all stages except Cryo- and StretchingStage



## Tunneling Current Conductive AFM (TC-CAFM) module – enclosed volume

For low-conducting sample experiments under controlled environmental conditions

### Key features

- Tip-bias cantilever holder with integrated current amplifier circuit
- SmallCell-based, based closed volume cell with < 140 $\mu$ l volume and connections for perfusion/gas flow
- Sample holder for conductive samples (optional transparent sample holder)
- Optimized cantilever exchange tool
- Software interface
- Bias Voltage +/- 10V
- Current Range: +/- 10nA
- Gain: 1000V/ $\mu$ A
- Noise limit 100fA RMS
- Compatible with all stages except Cryo- and StretchingStage

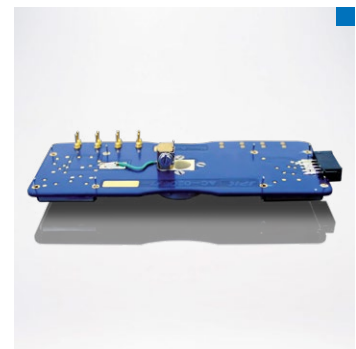


## Scanning Tunneling Microscopy (STM) module

Tip-bias wire holder with integrated current amplifier circuit and automatic sample grounding

### Key features

- Tip holder for 0.25mm or 0.5mm wire probes
- Sample holder for conductive samples (optional transparent sample holder)
- Optimized cantilever exchange tool
- Bias Voltage +/- 10V
- Current Range: +/- 100nA, +/- 10nA
- Gain: 100V/ $\mu$ A
- Software interface
- Compatible with all stages except Cryo- and StretchingStage

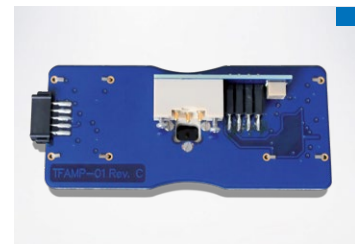


## Tuning Fork module

For tuning fork-based feedback modes e.g. fiber-SNOM or TERS

### Key features

- Works with self-excitation or external mechanical dither
- Allows vertical (shear force) or horizontal mounting of tuning forks
- Includes two holder boards and two 40kHz tuning forks for customer self-assembly
- Software interface
- Improved mounting mechanism for holder boards

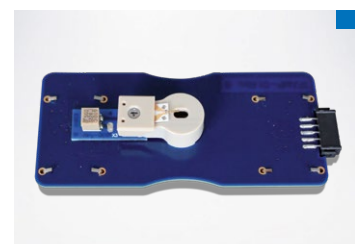


## Akiyama Probe module

For TAO module, CellHesion module and HybridStage

### Key features

- Software interface
- Designed to work with Akiyama-Probes
- Includes 2 Akiyama probes
- Requires Vortis 2 SPM Controller
- Allows imaging without AFM laser for light sensitive samples
- No alignment necessary, probes can be easily mounted



# 4 Application modules and modes



## Optical focus tracking

For TAO module, CellHesion module and HybridStage

### Key features

- Moves the microscope objective
- Synchronous or asynchronous focus tracking
- Spacers for rising stage and condenser
- Piezo range 100µm (PIFOC® from Physik Instrumente (PI) GmbH & Co. KG ) or 150µm (SFS SlimFocus from nanoFaktur GmbH)



## High Voltage Sample Bias Amplifier for PFM

For biasing a sample, e.g., in electro-optical experiments or in Piezoresponse Force Microscopy (PFM) and piezo hysteresis mapping

### Key features

- Measurement of amplitude & phase of the response
- Voltage range +/- 100V, Bandwidth up to 100kHz
- Max. current 75mA
- Incl. Cantilever Holder with electrical tip connection
- Software interface, includes PFM mode



## Low Voltage Sample Bias for PFM

For biasing a sample to low voltages, e.g., in electro-optical experiments or in Piezoresponse Force Microscopy (PFM) and piezo hysteresis mapping

### Key features

- Measurement of amplitude & phase of the response
- Voltage range +/- 10V, Bandwidth up to 100kHz
- Max. current 2mA
- Incl. Cantilever Holder with electrical tip connection
- Software interface, includes PFM mode



## Scanning Thermal AFM from Bruker Anasys

For thermal conductivity experiments

### Key features

- System includes software, power supply, controller, CAL box, bridge cable and five SThM probes
- Probes come pre-mounted for easy exchange and allow high resolution thermal imaging (<0.1 °C) and heating up to 160°C



## ForceWheel

For most sensitive experiment control, e.g. force fishing experiments

### Key features

- Manual force curve acquisition
- Continuous setting of gains and setpoints
- Easy, controlled attachment of cells or beads to cantilever tip

Illustration similar

# 5 Sample stages

## HybridStage\*

Automated mapping of sample properties over a large range. For samples such as structured substrates, microspheres and cells

### Key features

- Combined piezo and motorized stages for automated mapping or scanning of large areas
- Maps large objects such as cell scaffolds, printed 3D structures, micro-spheres or capsules and micro/nano structured surfaces over millimeter distances
- Cell/cell or cell/substrate adhesion in 3D with a large pulling range of up to  $300 \times 300 \times 300 \mu\text{m}^3$
- Mechanical properties of plant cells, cell layers, cartilage, parasites, scaffolds, bones or tissue, typically with rough surfaces over a mm range
- Optional XY or XYZ piezo flexure scanners with a large travel range (depending on the application) can be implemented
- Automated and streamlined workflow with the motorized HybridStage

\*Optical microscope and NanoWizard head are not included



## StretchingStage\*

For in-situ mechanical testing

### Key features

- Stand-alone stage with integrated sample stretching and compression capabilities
- Enables fine motion control for precise positioning of the AFM tip relative to the sample
- Sample size/distance between jaws 10-20mm or 25-35mm (standard stage)
- Maximum travel range: 10mm
- Force range: exchangeable load-cells, range 2N and 200N, accuracy readout +/- 1 %
- Velocity: 0.1 mm/min to 1.5mm/min
- Encoder: resolution 300nm, linearity 0.1 % of full travel
- Flexible design for different samples
- Comprehensive software control
- Real-time display of force, extension and time, live graphical display of stress/strain curve
- Not compatible with inverted microscopes

\*NanoWizard head is not included



## StretchingStage for higher forces\*

For in-situ mechanical testing with higher forces

### Key features

- Stand alone stage with integrated sample stretching and compression capabilities
- Force range: 10N and 5000N (10000N avail.) exchangeable load cells
- Velocity: 0.006 to 3mm/min
- Maximum travel range: 40mm for samples of 5mm length between jaws (resolution 100nm)
- Not compatible with inverted microscopes
- Motor power: 20W

\*NanoWizard head is not included



## Motorized precision stage

Offers automatic motion control for precise positioning of the sample relative to optical axis and AFM probe

### Key features

- Transmission illumination capability for inverted optical microscopes like Olympus IX line, Zeiss Axio Observer/Axiovert 100/135/200, Nikon TE 2000 or Ti series, Leica DMI/DMi lines. Please specify model upon order.
- Travel range of the sample  $20 \times 20 \text{mm}^2$
- Step size (Resolution):  $\leq 1 \mu\text{m}$
- Repeatability (uni-directional):  $\leq 2 \mu\text{m}$
- Maximum velocity: 1 mm/s
- With joystick or software control
- For automated tiling or mapping applications
- Manual precision positioning of the AFM tip
- Stand alone use or for inverted optical microscopes
- Compatible with all JPK add-ons, glass slides, Petri dishes etc.
- Compatible with NanoWizard, ForceRobot 300 and CellHesion 200 heads



## Sample holder for large samples

Fits directly on to the manual or motorized precision stage

### Key features

- The holder can accommodate larger samples such as microchips or wafers and is equipped with spring clips which can be varied



# 5 Sample stages



## Manual precision stage

Offers sub-micron resolution & fine motion control for precise positioning of the AFM tip relative to optical axis and the sample

### Key features

- Transmission illumination capability for inverted optical microscopes like Olympus IX line, Zeiss Axio Observer/Axiovert 100/135/200, Nikon TE 2000 or Ti series, Leica DMI/DMi lines. Please specify model upon order
- Travel range of the sample  $20 \times 20 \text{ mm}^2$
- Precise positioning of the sample holder with thermally decoupled, magnetic fixation
- Flexible design for fluid cells, temperature control options, and customized sample holders
- Detachable from optical microscope for stand alone operation
- Drift compensated design
- Compatible with NanoWizard, ForceRobot 300 and CellHesion 200 heads

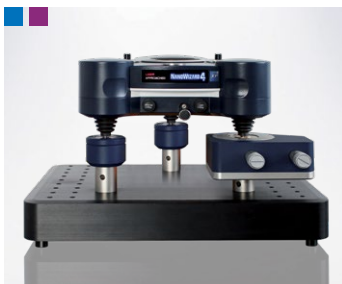


## Standard stage

Offers fine motion control for precise positioning of the AFM tip relative to the sample

### Key features

- Travel range of the AFM head (tip positioning)  $10 \times 10 \text{ mm}^2$
- Stand alone use in combination with JPK TopViewOptics
- Magnetic sample holder
- Flexible design for fluid cells and different sample holders
- Rigid, chemical resistant surface
- Maximum flexibility for customized sample mounting



## Head-up stage\*

For accommodating tall samples and for additional free space around the sample

### Key features

- For tall samples from 68mm up to 140 mm in height (other sample heights on request)
- Flexible design for customized sample holder setups
- 6mm holes in metric raster with 25 mm distance to mount accessories
- Rigid, chemical resistant surface
- Enables fine motion control for precise positioning of the AFM tip relative to optical axis and the sample
- Not compatible with inverted microscopes

\*NanoWizard head is not included



## TAO Tip Assisted Optics module

Specialized sample stage for advanced experiments combining AFM and optical spectroscopy based on proven NanoWizard technology. 2 axis and 3 axis version available. (see TAO module product note)

### Key features

- Ultimate platform for co-localized Raman, TERS, scatter type SNOM, and single molecule imaging/spectroscopy experiments
- NanoOptical studies such as quenching, field enhancement or bleaching
- Integrated, sample scanning, confocal imaging
- Integrates with conventional and advanced optical imaging (DIC, Phase contrast, CLSM, TIRF, FRET...)
- Flexible software system solution for experimental freedom and remote operation
- Ultimate flexibility as a result of simultaneous control of up to 6 scan axes with closed loop precision (linearized with capacitive sensors):
- Sample scanner:  $100 \times 100 \times 10 \mu\text{m}^3 / 100 \times 100 \mu\text{m}^2$
- Compatible with the Vortis 2.1 Advanced controller



## CellHesion module

As an add-on to the NanoWizard, the CellHesion module combines the capabilities of the BioAFM with precise adhesion force measurements and all optical microscopy features simultaneously. (see CellHesion module product note)

### Key features

- 100µm additional z-travel
- Perfect hardware linearization as a result of capacitive sensors
- Simultaneous focus tracking option
- Integrates with advanced optical imaging (DIC, Confocal microscopy, FRET...)

# 6 Cantilever holder options

Contact us for further specialized solutions.

## Fixed-spring cantilever holder

Standard holder for all-round applications

### Key features

- For air or aqueous solutions
- Compatible with JPK BioCell, CoverslipHolder or PetriDishHeater for easier navigation
- Robust design using glass and medical steel
- For measurements in fluid droplets or in fluid baths like Petri dishes or home made fluid cells
- Immersible to 8mm fluid depth
- Easy to clean
- Easy handling even with gloves
- Included in starter kit



## TopView cantilever holder

For all-round applications with a large optical field of view

### Key features

- Chemically inert cantilever holder
- Optimized for use with top-view optics
- Robust design using glass and medical steel spring only
- Immersible to 6mm fluid depth
- Easy to clean with detergents, in an ultrasonic bath or by autoclaving
- Easy handling, even with gloves
- Measurements in droplets or in fluid baths like Petri dishes or home made fluid cells
- Works in air and liquid, including aggressive media



## Cantilever holder with electrical tip connection

For use in air with a fixed cantilever spring and an electrical tip connection

### Key features

- Fixed spring holding mechanism
- Super cut extended for petri dishes
- Incl. spare screws
- Length: 15.5 mm
- Electrical connection from AFM controller to cantilever
- Not suitable for working in heated liquids

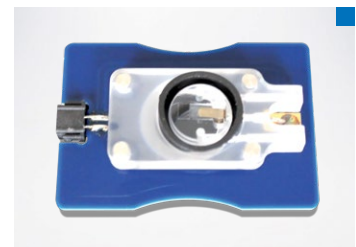


## Cantilever holder with electrical tip connection – enclosed volume

For use under controlled environmental conditions with a s-shaped spring and an electrical tip connection

### Key features

- SmallCell-based, closed volume cell with < 140 µl volume
- Connections for perfusion/gas flow
- Sample holder for conductive samples (optional transparent sample holder)
- Heating up to 70°C only



## SideView cantilever holder

For use in combination with inverted optical microscopes to observe the cantilever region from the side

### Key features

- Super cut, fixed spring, length: 15.5 mm
- Cantilever holder with precise mounted mirror
- Allows both view from below and front of cantilever
- Visual observation of tip-sample region, e.g., for cell pick-up
- Compatible with aqueous solutions and epi-illumination
- Available numerical aperture: 0.3

**Objectives with minimum 4 mm working distance required (20x recommended)**



# 7 Environmental control options – fluid cells and temperature controls



## BioCell for coverslips with temperature control

For living cell and single molecule experiments with AFM and high-end optics

### Key features

- Compatible with transmission illumination
- Cover slip bottom for high NA objectives (1"/25mm circular cover slips, 0.17mm thickness)
- Easy sample exchange via quick lock mechanism
- Optimized stability for single molecule imaging and force measurements
- Connections for perfusion and gas supply
- 15°C to 60°C thermoelectric heating/cooling
- Soft sealing by silicone membrane
- Works in air or fluids for all AFM modes
- Full featured temperature controller
- Temperature stability 0.1 K

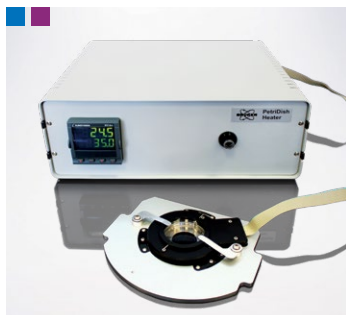


## CoverslipHolder

Same design as the BioCell but without temperature control; ultimate high resolution liquid cell with coverslip bottom

### Key features

- Fluid cell for Life Science stage
- Perfusion connection
- Cover slip bottom for high numerical aperture fluorescence imaging
- Rigid clamping for single molecule AFM resolution
- For 1" circular cover slips



## PetriDishHeater

For temperature controlled, living cell experiments with AFM and high-end optics

### Key features

- Insert for Life Science stage
- Temperature range: Room temperature up to 60°C
- Compatible with 35×10mm Petri dishes from WPI and TPP (plastic or plastic with glass bottom)
- Adaptors for other suppliers such as Matek, Willco, IWAKI, Ibidi, and BC upon request
- Ports for perfusion tubes and gas supply (only available for certain types of Petri dishes)
- Silicone anti-evaporation seal
- Software control
- Temperature stability 0.1 K



## PetriDishHeater for BioMAT

Shuttle stage with integrated Petri dish heater for JPK BioMaterials workstation

### Key features

- Temperature range: Room temperature up to 60°C
- Compatible with 35×10mm Petri dishes from WPI and TPP – plastic or plastic with glass bottom
- Dipping lenses need to be compatible with type of Petri dish
- Temperature stability 0.1 K
- Software control



## PetriDishHolder

Designed like the PetriDishHeater, but without temperature control; ultimate liquid cell for high resolution experiments in a Petri dish

### Key features

- Insert for Life Science stage
- Compatible with 35×10mm Petri dishes from WPI and TPP (plastic or plastic with glass bottom)
- Adaptors for other suppliers such as Matek, Willco, IWAKI, Ibidi, and BC upon request
- Ports for perfusion tubes and gas supply (only available for certain types of Petri dishes)
- Openings for immersion medium applications
- Silicone anti-evaporation seal



# 7 Environmental control options – fluid cells and temperature controls

## Active humidity control package with PetriDishHeater

Bruker offers an external OEM humidifier and sensor package together with the PetriDishHeater.

### Key features

- Up to 75 % relative humidity (RH) at ambient temperature (lower RH required separate dry air support), column and tube heating allow RH up to 95 %
- External humidifier column with microfilter candle and heating rod
- Humidification controller incl. dry and wet air mixing device to control air and humidity sensor
- Humidification pre-chamber for PetriDishHeater and sets of tubings and adapters
- Sensor package (I2C) for measurement of temperature and humidity directly within the chamber



## SmallCell closed liquid cell for harsh solvents

For smallest volume experiments in a hermetically sealed environment

### Key features

- Compatible with transmission illumination
- Small volume (<140µl)
- Hermetically sealed
- BK7 glass and steel spring clip
- Perfusion possibility with inlet and outlet ports
- Easy to clean with solvents and ultrasonic bath
- Two springs and O-rings for aqueous solutions, acids, bases, and harsh solvents
- Independent Cantilever Holder



## 3-port small volume SmallCell

For smallest volume experiments in a hermetically sealed environment with aqueous solution exchange

### Key features

- Set of two cells
- For aqueous solutions
- Compatible with transmission illumination
- Ultra-small volume of <60µl
- Polycarbonate with silicone seal
- Perfusion possibility
- 2 Luer ports for buffer exchange
- 1 inlet port with septum for small amounts of substances or drugs
- Easy to clean in ultrasonic bath or with ethanol
- Cantilever fixation with designated glue
- Starter kit with tubing, syringe, syringe adaptors, and 2 seals



## High Temperature Heating Stage (HTHS)

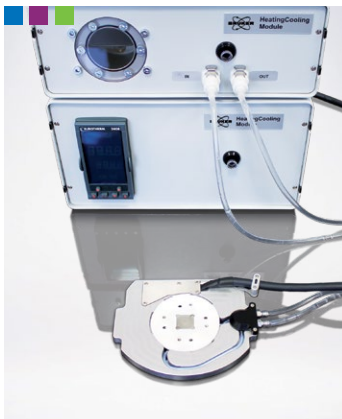
High performance heating stage is designed for demanding polymer applications and for stable, long time temperature studies of single molecules or nanoparticles

### Key features

- Insert for Life Science stage
- Opaque samples
- Resistive heating ambient to 300°C
- 15mm diameter area size
- Full featured temperature controller
- Works in air and fluids for all AFM modes controlled by software (fluids up to 80°C)
- Fast settling time
- Temperature stability 0.1K



# 7 Environmental control options – fluid cells and temperature controls



## Heating Cooling Module (HCM)

Designed for heating and cooling experiments in gas or liquids with minimized drift in all dimensions

### Key features

- Insert for life science stages
- Temperature control from -30 to 120°C
- Soft sealed cell with gas flow connection for dry or inert gas
- 15 × 15 mm sample size, magnetic fixation
- Thermoelectric cooling/heating
- Closed circuit liquid cooling – a chilled reservoir is required for lowest temperatures (not supplied)
- Complete set of tubes and connectors including flow indicator

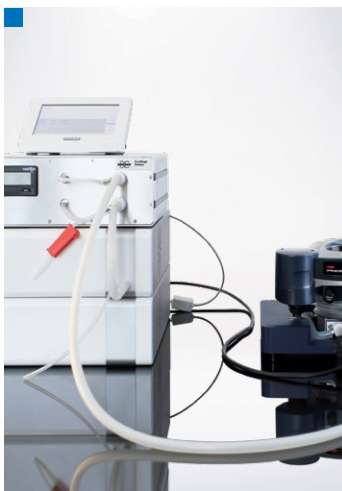


## Heating Cooling Stage (HCS)

Designed for AFM experiments in air or liquids, from 0°C up to 100°C, with minimized drift in all dimensions

### Key features

- 0°C to 100°C temperature range
- Stand-alone stage for opaque samples
- Thermo-electric temperature control
- Includes JPK SmallCell fluid cell
- 20 mm × 20 mm maximum sample size
- Full featured temperature controller
- Works in air or fluids and all AFM modes
- Fast settling time
- Temperature stability 0.1 K



## Cryostage\*

From -120°C to 220°C for low temperature applications

### Key features

- Temperature range from -120°C up to 220°C, temperature stability +/- 0.2°C
- Minimized vibration for high-resolution imaging of samples
- Sealed volume with gas flow connection for dry or inert gas over the complete temperature range
- Rapid cooling rate with liquid nitrogen (> 10°C/min) and nitrogen environment to prevent ice formation while cooling
- Fine motion control for precise positioning of the AFM tip relative to the sample of 10 × 5 mm
- Integrated Linkam Scientific Instruments technology
- Ergonomic LCD touch screen control
- Sample size: Up to 22 mm × 22 mm
- For opaque samples, no transmission illumination
- Can be combined with electrical, magnetic, nanomechanical measurement modes

\*NanoWizard head is not included

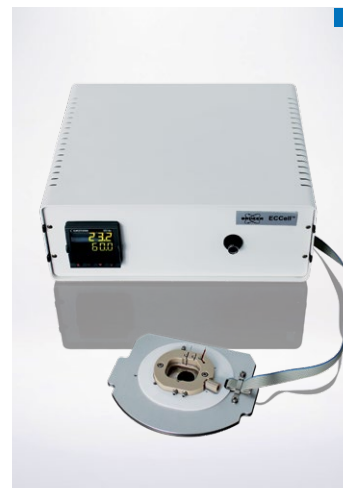
# 8 Electrochemistry solutions

## Temperature controlled ECell

For electrochemistry with temperature control and transmission optics such as phase contrast, DIC or fluorescence together with AFM; ideal for combined studies of temperature and potential-sensitive biomolecules

### Key features

- Works with transparent or non-transparent substrates
- Accommodates standard coverslips, metal or silicon chips or other substrates
- Temperature range from ambient to 60 °C
- max. 1350 µl liquid volume with perfusion capability
- Sealed design for inert gas filling
- Wire electrodes and miniature reference electrode. Suitable for conductive films or substrates (e.g., ITO coated glass)
- Compatible with common potentiostats
- Allows the use of high numerical aperture lenses for optimum fluorescence performance
- Unrestricted high resolution AFM imaging



## Heating Cooling Stage (HCS) with electrochemistry cell

Designed for electrochemistry AFM experiments with controlled heating and cooling of the sample

### Key features

- For opaque samples
- Temperature range from 0 °C to 100 °C
- Temperature resolution 0.1 °C
- Twin stage thermoelectric element
- Drift minimized in all directions for full temperature ramps simultaneous to AFM imaging
- Heat-pipe design – no water cooling or fan required
- Top-view optical access for easy navigation
- Max. 1350 µl liquid volume with perfusion capability
- Sealed design for inert gas filling
- Wire electrodes and miniature reference electrode



## Scanning Electrochemical Microscopy (SECM) option

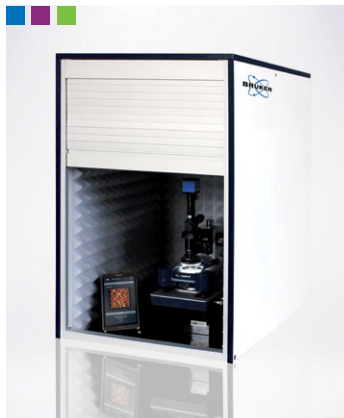
For scanning electrochemistry

### Key features

- Previously unobtainable electrochemical information with < 100 nm spatial resolution
- Simultaneous electrochemical, electrical, and mechanical mapping in liquid
- Reliable, easy-to-use commercially available probes specifically designed for SECM
- Highest resolution SECM and atomic force microscopy performance with a NanoWizard AFM



# 9 Vibration and acoustic isolation



## Acoustic enclosure table top version\*

Approved for high performance applications:  
Space saving acoustic hood for utmost stability and isolation

### Key features

- 76 × 75 × 100 cm<sup>3</sup> external dimensions
- Houses NanoWizard AFM with TopViewOptics
- Acoustic insulation for common laboratory noise conditions
- Provides space for active vibration isolation platforms like Accurion i4 or TS150
- Requires a solid table or base frame for setup suitable for AFM operation

\*TopViewOptics, tablet and NanoWizard head are not included



## Active vibration isolation from Accurion

### Key features

- i4 Series – compact table-top vibration isolation unit
- Active Workstation 780 and 900 – active vibration isolation workstations



## Acoustic enclosure, various versions

Approved for high performance applications:  
Acoustic hood for utmost stability and isolation

### Key features

- Standard: 1060 × 1060 × 1160 mm<sup>3</sup> ext. dimensions
- Large: 1560 × 1065 × 1160 mm<sup>3</sup> ext. dimension
- Extra-large: 1860 × 1060 × 1160 mm<sup>3</sup> ext. dimensions
- Houses inverted optical microscope with NanoWizard AFM
- Foam acoustic insulation for common laboratory noise conditions (can also be obtained without foam at no extra charge. Suitable e.g. for washing down in a Biosafety environment)
- Provides space for active vibration isolation platforms like Accurion i4 or TS150
- Front section detachable for easier transport
- Standard and large versions also available with heating system



## Base for acoustic enclosure

Approved for high performance applications:  
Base frame with flat top surface designed for carrying Bruker's acoustic hoods

### Key features

- Free standing support table
- Robust, welded steel construction
- Stable sandwich top-plate:
  - Standard: 113 cm × 113 cm
  - Large: 162 cm × 112 cm
  - Extra-large: 190 cm × 112 cm
- Stable base for Acoustic Enclosure
- Can accommodate active vibration isolation systems from Accurion or Table Stable

# 10 Optics accessories

## TopViewOptics with granite base\*

For stand-alone AFM configuration

### Key features

- For opaque samples
- Long working distance zoom lens from Navitar™
- 2mm-400µm field of view
- Köhler illumination, fiber light illumination
- Color CCD camera
- Easy positioning and focus adjustment

\*NanoWizard head is not included



## TopViewOptics with breadboard

For use with inverted optical microscopes or JPK BioMAT

### Key features

- For opaque samples
- Long working distance zoom lens from Navitar™
- 2mm-400µm field of view
- Köhler illumination, fiber light illumination
- Color CCD camera
- Easy positioning and focus adjustment



## TopView optical module\*

Optical system for viewing tip and sample during experiments on opaque samples

### Key features

- Integrated camera with images captured directly into the AFM software
- Can be mounted on the AFM head while the head is mounted on the inverted fluorescence microscope as well as standalone
- Top-down view perpendicular to sample plane
- Magn. 10x
- Up to 5MP, frame rate max 9FPS
- Camera connection type USB 2.0

\*NanoWizard head and stage are not included



# 10 Optics accessories



## BioMaterials Workstation BioMAT\*

The specialist for investigations of opaque samples in life and material sciences.

(see BioMAT product note)

### Key features

- For studies on non-transparent substrates or samples with AFM and optics
- Outstanding reproducibility of the focussed position (ROI) with both systems
- Unique capability to investigate the ROI precisely with optics and AFM
- Also perfect during operation in liquids
- Wide range of applications: Biochips, cell chips or patterned substrates for cell adhesion, plant cell applications, microbiology, tissue engineering, ...
- Flexible concept with shuttle stage
- Both techniques can even be operated in different laboratory rooms

\*Optical microscope and NanoWizard head are not included



## Upright Fluorescence Microscope (UFM) kit\*

Enables the combined use of AFM and upright fluorescence zoom microscopy for co-localization experiments on opaque substrates

\*Optical microscope and NanoWizard head are not included



## Fiber-coupled detection module

Allows the precise capture of light emitted by the SPM tip region into a fiber-coupled detector; suitable for home-built SNOM or other light emitting tip experiments

### Key features

- Fiber coupler for 50 $\mu$ m core multi-mode optical fiber (FC connector)
- Fits to c-mount equipped inverted optical microscopes
- Precise manual xy positioning of the fiber end
- Built-in CCD-camera system for the alignment of emission spot to fiber center
- Three way optical switch for viewing sample, fiber end, and semi-transparent overlay



## Inverted optical microscope configurations

Research lines of inverted optical microscopes from Zeiss, Olympus, Nikon, and Leica; ask the Bruker JPK BioAFM applications team for more information



## Raman spectroscopy

Raman spectrometers from Princeton Instruments and Renishaw



## Data communication kit

Allows communication and integration of advanced optical systems such as FLIM, Confocal, Superresolution, Raman

# 11 OEM solutions and small parts

## Stand for AFM head

Parking stand for all NanoWizard, CellHesion or ForceRobot 300 heads



## JPK sample holder for small samples

Adaptor for standard sample holder; holds magnetically fixed AFM metal stubs



## JPK cable anchorage pillow

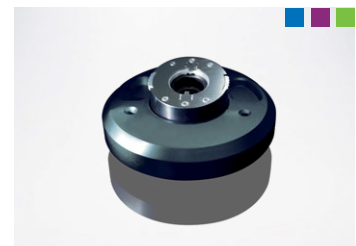
Heavy weight pillow for fixation of cables to reduce noise coupling



## JPK cantilever changing tool

Probe loading station for convenient cantilever exchange

- Included in starter kit



## JPK biocompatible glue

For cantilever or sample fixation, easily removable and biocompatible

- Included in starter kit



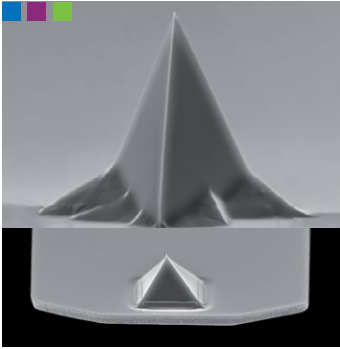
## JPK spare parts

Available on request

- Springs for different cantilever holders
- Fluid cell seals
- Adapters
- Coverslips
- Tubing for fluid cells



# 11 OEM solutions and small parts

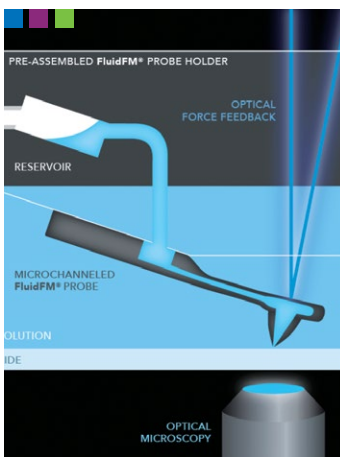


## AFM probes

For all kind of applications and experimental needs

- Probes for standard applications (e.g., contact mode, AC mode)
- Super sharp probes for high resolution applications
- Probes for living cell/soft matter imaging
- Probes for force spectroscopy
- Probes for specialized applications (SECM, conductive, high aspect ratio, and many more)

**Please visit our online store at [bruker.afmprobes.com](http://bruker.afmprobes.com) for an overview.**



## FluidFM ADD-ON from Cytosurge

For advanced single cell, spectroscopy and nanomanipulation experiments

The FluidFM technology enables easy handling of liquid volumes at the femtoliter scale by providing a range of hollow cantilever designs. It enhances the capabilities of your system and opens up new fields of application such as:

- Single cell adhesion measurements with forces > 50 nN
- Single cell injection of targeted drugs or gene vectors
- Colloidal spectroscopy to directly measure interaction forces between colloidal particles and surfaces
- Enhanced nanomanipulation capabilities, and more
- All NanoWizard, CellHesion and ForceRobot platforms are compatible with the FluidFM ADD-ON from Cytosurge.
- It is available as
  - separate add-on (FluidFM ADD-ON Silver) or
  - fully integrated solution (FluidFM ADD-ON Gold and Platinum)

© Cytosurge AG



## CO<sub>2</sub> Controller

For living cell applications

### Key features

- CO<sub>2</sub> control device for the generation of a defined CO<sub>2</sub> concentration
- CO<sub>2</sub> setpoint value from 0.0 Vol-% up to 20.0 Vol-%
- Resolution of the CO<sub>2</sub> display: 0.1 Vol-%
- Resolution of the internal CO<sub>2</sub> loop control: 0.01 Vol-%
- Humidification bottle (500ml) is included, to compensate the strong drying effect
- Tubing and adapters are included
- External CO<sub>2</sub> support needed (CO<sub>2</sub> from e.g. gas cylinder is added to the ambient air)

© PeCon GmbH

## OEM syringe pumps

JPK offers syringe pumps from World Precision Instruments (WPI):

### Aladdin AL-1000

- Accepts syringe sizes: 1-60mL
- Programmable, economical, versatile
- Single pump
- Up to 100 pumps can be daisy-chained together via RS232 network

### Aladdin AL-4000

- Accepts two different syringe sizes: smallest-60mL
- Programmable, economical, versatile
- Infuses and withdraws
- Pumping rates: 1.459mL/hr-127.2mL/min

1) Native 2) On-board based on company supported SDK/Demo software 3) Communication link to separate hardware and software



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# 11 OEM solutions and small parts

## CCD, EMCCD and CMOS cameras

The DirectOverlay 2 optical integration can be used with any camera.  
The following cameras are preferred and can be offered directly:

### Andor™ Technology

- iXon+ EMCCD<sup>1)</sup>
- Luca EMCCD<sup>1)</sup>
- Clara Interline CCD<sup>1)</sup>
- Zyla sCMOS<sup>1)</sup>



### Jenoptik ProgRes® cameras series, such as

- MF cool<sup>1)</sup>
- CF cool<sup>1)</sup>
- Gryphax USB 3.0 CMOS cameras (Arktur, Rigel, Kapella)<sup>1)</sup>



### The Imaging Source

- FireWire CCD camera<sup>1)</sup>
- USB 3.1 CMOS cameras DFK/DMK/DBK/ 37BU family<sup>1)</sup>



### IDS Imaging Development Systems

- Compact USB CCD 1 and CMOS cameras of type µEye® and UI<sup>1)</sup>



### Photometrics

- Evolve™ EMCCD<sup>3)</sup>



### Hamamatsu Photonics K.K.

- ORCA CMOS<sup>3)</sup>



### PCO

- Panda family USB, sCMOS2<sup>1)</sup>



### Ximea

- CMOS USB 3.0 camera<sup>1)</sup> (MC031, MC023)



## OEM incubators for Live Cell experiments under controlled environments

JPK offers different incubator models for LIVE CELL applications together with NanoWizard or CellHesion systems.

## OEM glove box systems for NanoWizard AFMs

The AFM system can be used in a glove box under controlled atmospheres.



# 12 Indentation solutions



## **Bruker BioSoft in-situ indenter**

For soft biomaterials mechanical characterization

- Seamless integration with inverted microscopes for maximum test flexibility
- Characterization of specimens ranging from sub-cellular to tissue levels
- In-situ observation during mechanical testing
- Access to physiological pressures from Pa to kPa
- Customizable probes
- Maximum Force: 10mN
- Load Noise Floor: < 750nN
- Normal Force Bit Resolution: 1 nN
- Maximum Displacement: 150  $\mu$ m
- Displacement Noise Floor: < 1 nm
- Normal Displacement Bit Resolution: 0.006 nm
- Thermal Drift of Sensor:  $\leq 0.05$  nm/sec

\*Optical microscope and NanoWizard head are not included





# Bruker Online Probes Store

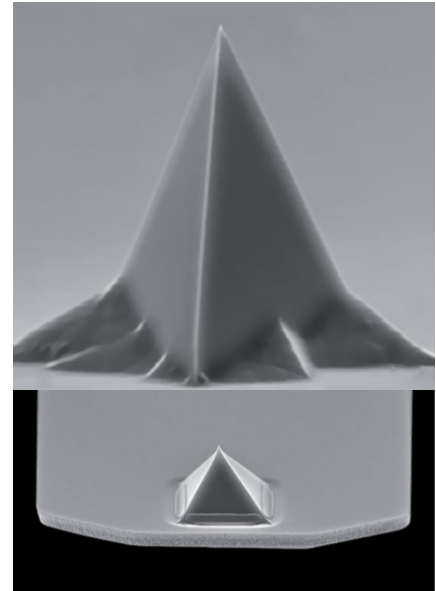
## For all your application needs

**No matter what your sample, application or environment, Bruker has the right probe for you.**

Bruker is the only major AFM/SPM equipment manufacturer that also owns and operates an AFM Probes Nanofabrication Center. Find an extensive line of industry-standard and specialized probes:

- Probes for living cell/soft matter imaging and mechanobiology applications
- Performance probes for highest resolution imaging and materials property mapping
- Only supplier of Bruker's unique PeakForce Tapping probes
- Probes for specialized applications (SECM, conductive, high aspect ratio, and many more)
- Probes for standard applications (e.g., contact mode, AC mode)
- Value Line probes for budget-conscious AFM research

This handbook reflects a large variety of options and will continue to grow in the future with the latest developments. If you cannot find an accessory or operating mode in this handbook, please ask us directly. Bruker is able to deliver customized solutions even for advanced applications.



For a complete list of our products and further useful information, visit

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