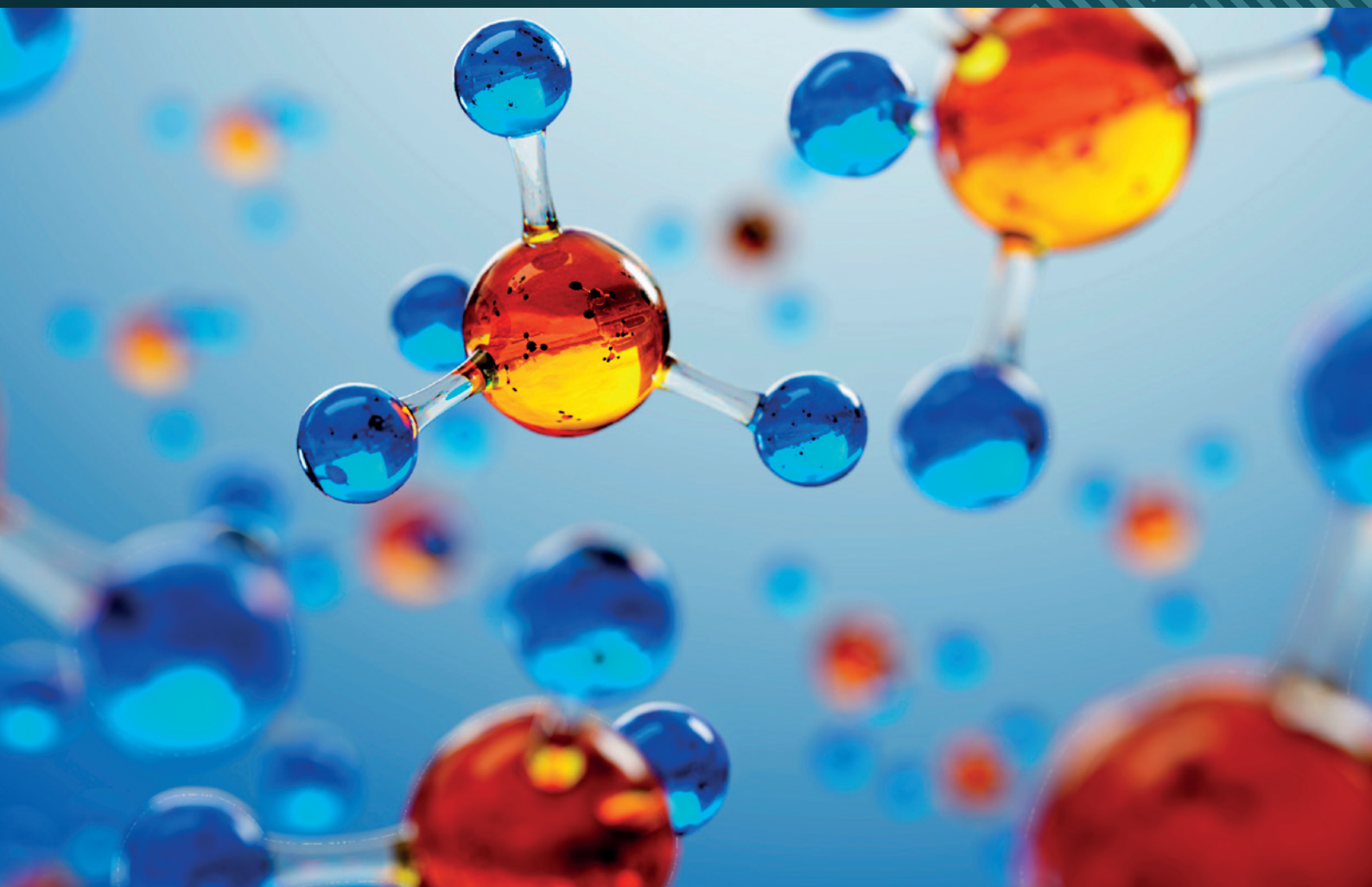




**Malvern  
Panalytical**  
a spectris company

# Pharmaceutical toolkit

Technologies and services for small molecule applications





Instruments														
<p><b>WAVEsystem, Creoptix GCI technology</b> Grating-Coupled Interferometry (Discovery)</p>	<p><b>PEAQ-ITC, MicroCal technology</b> Isothermal Titration Calorimetry (Discovery)</p>	<p><b>Zetasizer Advance</b> Dynamic light scattering (Discovery, QC)</p>	<p><b>Empyrean</b> X-ray diffraction (development)</p>	<p><b>Aeris</b> X-ray diffraction (QC)</p>	<p><b>Morphologi 4(-ID)</b> Automated Image Analysis (Morphologically-Directed Raman Spectroscopy)</p>	<p><b>Mastersizer 3000</b> Laser diffraction</p>	<p><b>Epsilon 4</b> X-ray fluorescence</p>	<p><b>Spraytec</b> Laser diffraction (aerosols)</p>	<p><b>Insitec</b> Laser diffraction (in process)</p>					
<ul style="list-style-type: none"> <li>• Measure binding kinetics</li> <li>• Measure binding affinity</li> <li>• Suitable for biophysical screening and in depth characterization of molecular interactions from hit to lead</li> </ul>	<ul style="list-style-type: none"> <li>• Measure Thermodynamics of molecular interactions</li> <li>• Measure binding affinity</li> </ul>	<ul style="list-style-type: none"> <li>• Measure particle size distribution and concentration of micro- and nano-suspensions to assess stability of:               <ul style="list-style-type: none"> <li>• Target assays</li> <li>• Lead compounds</li> <li>• Drug delivery systems</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Detect crystal structures to screen for solid form and its stability</li> </ul>	<ul style="list-style-type: none"> <li>• Detect crystal structures to:               <ul style="list-style-type: none"> <li>• Optimize solid form</li> <li>• Detect contaminants</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Detect crystal structures in non-ambient conditions to:               <ul style="list-style-type: none"> <li>• Assess stability of solid form</li> <li>• Characterize amorphous form</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Detect crystal structures to assess solid form for:               <ul style="list-style-type: none"> <li>• Quality assurance</li> <li>• Quality control</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure component specific particle size and shape distributions of powders to:               <ul style="list-style-type: none"> <li>• Assess filterability of reaction slurries</li> <li>• Assess flowability and packing density of powders</li> <li>• Detect process induced attrition</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure component specific particle size and shape distributions of powders and suspensions to:               <ul style="list-style-type: none"> <li>• Assess <i>in vitro</i> bioequivalence</li> <li>• Assess dissolution rate</li> <li>• Assess stability of suspensions</li> <li>• Detect foreign particles</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure particle size distributions of powders and slurries to:               <ul style="list-style-type: none"> <li>• Assess filterability of reaction slurries</li> <li>• Assess flowability and packing density of powders</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure particle size distributions of powders and suspensions to:               <ul style="list-style-type: none"> <li>• Assess dissolution rate</li> <li>• Assess stability of suspensions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure particle size distributions of powders, slurries and suspensions for:               <ul style="list-style-type: none"> <li>• Quality control</li> <li>• Quality assurance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Identify elements to:               <ul style="list-style-type: none"> <li>• Meet USP &lt;232&gt;, &lt;735&gt; and ICH Q3D for detection of elemental impurities</li> <li>• Quickly screen for trace elements</li> <li>• Detect residual catalyst</li> <li>• Screen for toxic and wear elements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure aerosol and droplet size distributions in order to:               <ul style="list-style-type: none"> <li>• Compare device and formulation performance as part of <i>in vitro</i> bioequivalence assessments</li> <li>• Understand how droplet and aerosol particle size change during device actuation</li> <li>• Understand the impact of formulation changes on device performance</li> <li>• Aid device selection</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Measure particle size distributions of powders, slurries and suspensions in-line, at-line and on-line for:               <ul style="list-style-type: none"> <li>• Quality control</li> <li>• Quality assurance</li> <li>• Process control</li> <li>• Process optimization</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• High sensitivity (k off 10 s<sup>-1</sup>)</li> <li>• Fast analysis</li> <li>• 2 x 96/384-well plate configuration</li> <li>• Crude samples</li> </ul>	<ul style="list-style-type: none"> <li>• 96-well plate configuration</li> <li>• 2°C – 80°C</li> <li>• 10 µg min sample mass</li> <li>• 370 µL sample volume</li> <li>• Up to 42 tests per 24Hr</li> </ul>	<ul style="list-style-type: none"> <li>• Size range               <ul style="list-style-type: none"> <li>• Size: 0.3 nm – 10 µm</li> <li>• Zeta potential: 3.8 nm – 100 µm</li> <li>• Minimum volume</li> <li>• Size: 3 µL</li> <li>• Zeta potential: 20 µL</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Highly customizable:               <ul style="list-style-type: none"> <li>• Multiple X-ray wavelengths</li> <li>• Multiple detector options and configurations</li> <li>• Multiple sample mount options</li> <li>• High sensitivity and throughput</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Turnkey solution for:               <ul style="list-style-type: none"> <li>• Structure determination</li> <li>• Phase identification</li> <li>• Phase quantification</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Size range 0.5 µm – 1300 µm</li> <li>• Precise dispersion control</li> <li>• Wet and dry dispersion</li> <li>• Optional Raman spectrometer</li> </ul>	<ul style="list-style-type: none"> <li>• Size range 0.01 µm – 3500 µm</li> <li>• Precise dispersion control</li> <li>• Wet and dry accessories</li> <li>• Dynamic imaging accessory</li> </ul>	<ul style="list-style-type: none"> <li>• Detection of elements from Fluorine to Americium, including ICH Q3D classes 1, 2A, 2B and 3</li> <li>• LLD 1 ppm – 100%</li> </ul>	<ul style="list-style-type: none"> <li>• Size range 0.1 µm – 2000 µm</li> <li>• Rapid data acquisition (10 KHz)</li> <li>• Droplet size evolution during actuation</li> <li>• Automated device actuation</li> <li>• Easy synchronization of device actuation and data acquisition</li> </ul>	<ul style="list-style-type: none"> <li>• Size range 0.1 µm – 2500 µm</li> <li>• Configurable to measure powders, suspensions and emulsions</li> <li>• ATEX 0, 1, 2, 20, 21 and 22 compliant</li> <li>• Automated clean and sterilize in-place capability</li> </ul>					
N/A	N/A	USP <729> ISO 22412:2017	USP <941> ICH Q6A ISO 13779-3	USP <941> ICH Q6A ISO 13779-3	USP <776>, <787>, <788>, <1787>	USP <429>, <729> ICH Q6A ISO 13320:2009	USP <232>, <233>, <735> ICH Q3D	ISO 13320:2009	ISO 13320:2009 ATEX 0, 1, 2, 20, 21 and 22					
OmniTrust – common software for the regulated environment						21 CFR Part 11 compliant								
Smart Manager – technology suite for telemetry and remote monitoring														



## About Malvern Panalytical

We draw on the power of our analytical instruments and services to make the invisible visible and the impossible possible.

Through the chemical, physical and structural analysis of materials, our high precision analytical systems and top-notch services support our customers in creating a better world. We help them improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy.

We partner with many of the world's biggest companies, universities and research organizations. They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity.

We are committed to Net Zero in our own operations by 2030 and in our total value chain by 2040. This is woven into the fabric of our business, and we help our employees and customers think about their part in creating a healthier, cleaner, and more productive world.

With over 2300 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurement group.

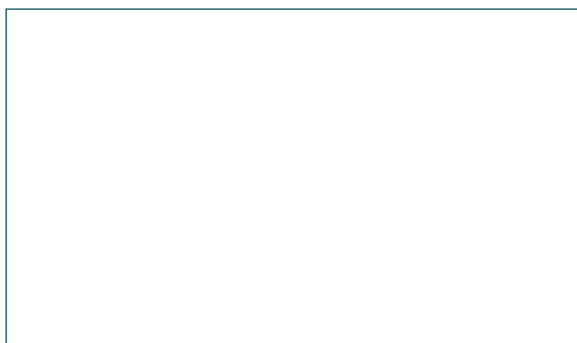
**Malvern Panalytical. We're BIG on small™**

## Service & Support

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy



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