

Investigate pharmaceutical solid dose products using the inVia confocal Raman microscope

Chemical sciences

The ideal system for the complete chemical characterisation of formulations

With so many components and properties, determining the composition, domain size and distribution of patent-expired commercially available formulations is highly desirable. This information creates opportunities to replicate an existing product without the need for lengthy development and prohibitive costs.

The inVia provides incredible chemical specificity and sensitivity, generating detailed chemical images on a wide range of formulation types.

Tablet contents, distribution and particle size:

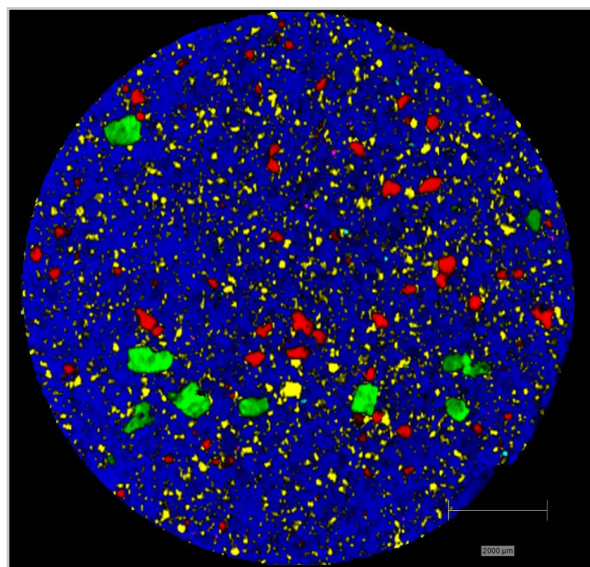
- Reveal API polymorphic forms and their stability in the tablet
- Produce quantified API domain size and distribution information
- Investigate excipient presence, domain size and distribution
- Generate chemical images of the entire tablet at high resolution (1 μm)

Multi-release formulations reveal layer contents and thickness:

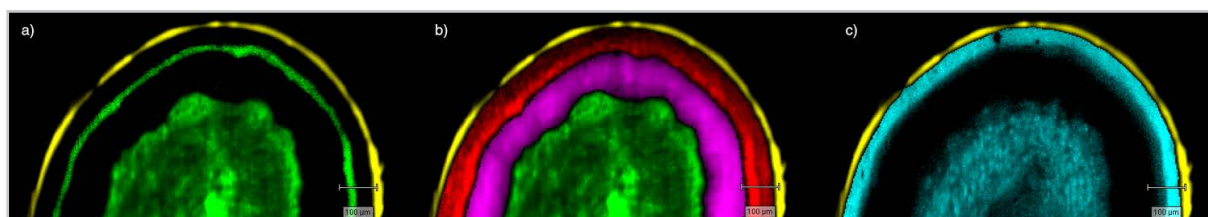
- Determine API and excipient layer contents and order
- Quantify the layer thickness
- Detect layer mixing of multiple species
- Analyse at sub-micrometre spatial resolution

Milli/micro-sphere contents and distribution:

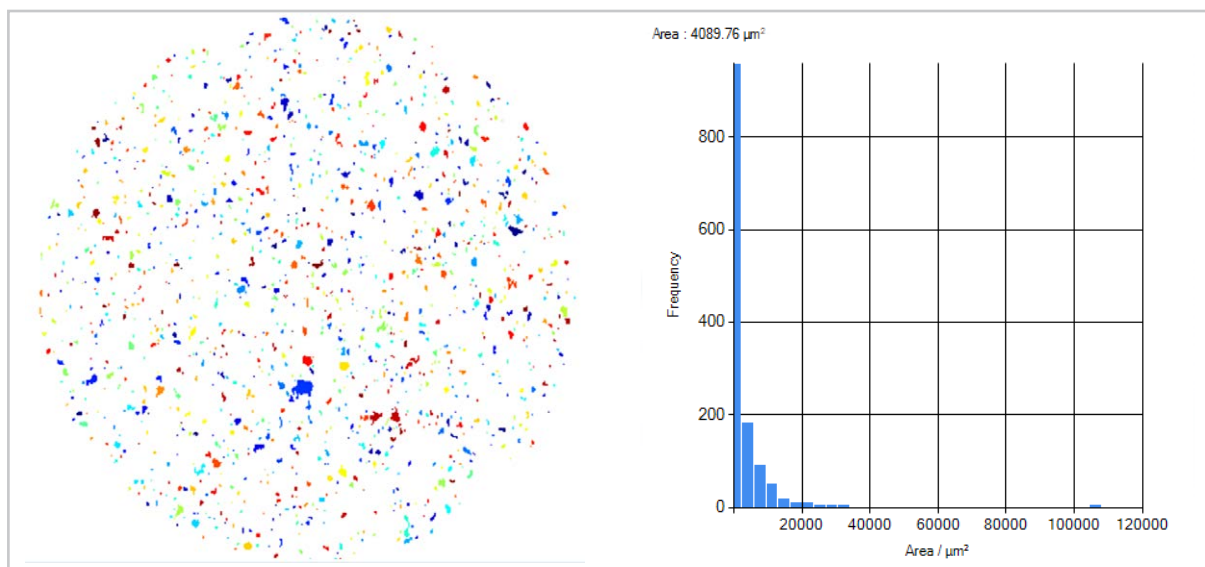
- Investigate API/polymer mixtures
- Sub-micrometre spatial resolution enables the analysis of the smallest microspheres
- Optimised depth analysis using high confocal system options



StreamLine™ Raman image of tablet used for the treatment of Parkinson's disease. The image reveals the presence, distribution and domain size of six components; levodopa API (yellow), benserazid API (red), anhydrous citric acid (green), maize starch (cyan), magnesium stearate (magenta), MCC (blue)



StreamLine™ Raman images of sectioned multi-coated microspheres. The images reveal the presence, distribution and coating thickness of five components; TIO₂ (yellow), sucrose (green), talc (red), API (magenta) and HPMC (cyan). Multi-component layers are also apparent.



Particle statistics image of levodopa API, revealing domain metrics (area, diameter, etc) and distribution from the entire tablet surface, using WiRE software.

Renishaw inVia: ideal for studying pharmaceutical formulations

- Research grade confocal Raman microscope
- High speed, damage-free chemical images using StreamLine™ imaging technology
- Complete sample coverage at spatial resolution values ranging from 1 μm to >150 μm , analysing the same sample depth using unique Slalom™ option
- Sub-micrometre resolution requirements using StreamHR™ confocal mapping
- Fast, easy and targeted chemical image generation
- Reveal the presence of unknown materials and identify them using the Renishaw Excipient Materials Database
- Option to upgrade to particle statistics WiRE module
- Configure for Transmission Raman capability
- Designed for use within a 21 CFR pt11 environment
- Access to Raman dedicated applications specialists with years of experience in pharmaceutical imaging



The Renishaw inVia confocal Raman microscope

Renishaw. The Raman innovators

Renishaw manufactures a wide range of high performance optical spectroscopy products, including confocal Raman microscopes with high speed chemical imaging technology, dedicated Raman analysers, interfaces for scanning electron and atomic force microscopes, solid state lasers for spectroscopy and state-of-the-art cooled CCD detectors.

Offering the highest levels of performance, sensitivity and reliability across a diverse range of fields and applications, the instruments are designed to meet your needs, so you can tackle even the most challenging analytical problems with confidence.

A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Please visit www.renishaw.com/raman for more information.

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