



1 **TESCAN ORSAY HOLDING, a.s. and WITec GmbH launch the RISE Microscope**  
2 **for Correlative Raman-SEM Imaging at Analytica 2014**

3 TESCOAN ORSAY HOLDING, a.s., a multinational company experienced in charged particle  
4 optics, and WITec GmbH, a distinguished German specialist in Raman and scanning probe  
5 microscopy, jointly launch RISE Microscopy at Analytica 2014.

6 RISE Microscopy is a novel correlative microscopy technique which combines confocal  
7 Raman Imaging and Scanning Electron (RISE) Microscopy within one integrated microscope  
8 system. This unique combination provides clear advantages for the microscope user with  
9 regard to comprehensive sample characterization: electron microscopy is an excellent  
10 technique for visualizing the sample surface structures in the nanometer range; confocal  
11 Raman imaging is an established spectroscopic method used for the detection of the  
12 chemical and molecular components of a sample. It can also generate 2D- and 3D-images  
13 and depth profiles to visualize the distribution of the molecular compounds within a sample.  
14 The RISE Microscope enables for the first time the acquisition of SEM and Raman images  
15 from the same sample area and the correlation of ultra-structural and chemical information  
16 with one microscope system.

17 Both analytical methods are fully integrated into the RISE Microscope. Between the different  
18 measurements an extremely precise scan stage automatically transfers the sample inside the  
19 microscope's vacuum chamber and re-positions it. The integrated RISE software carries out  
20 the required parameter adjustments and instrument alignments. The acquired results can  
21 then be correlated and the Raman and SEM images overlaid. "RISE Microscopy enables  
22 unprecedented opportunities for the most comprehensive ultra-structural and molecular  
23 sample analyses." explains Dr. Olaf Hollricher, CEO and Director R&D at WITec "The novel  
24 RISE Microscope is another striking example of WITec's enormous innovative strength. It  
25 fulfills all requirements of an outstanding, correlative microscopy technique and will  
26 convince the Raman as well as the SEM community."

27 TESCOAN and WITec arranged worldwide sales and after-sales cooperation for the RISE  
28 Microscope to take advantage of the synergy effects of both companies. "We are very  
29 pleased to cooperate with WITec. Our common purpose is to achieve the utmost customer  
30 satisfaction." says Jaroslav Klíma, Chairman of the Board and CEO at TESCOAN ORSAY  
31 HOLDING "We consider this an important step in the development of integrated systems for  
32 the observation and analysis of samples on the nano-scale. The RISE Microscope enriches  
33 the TESCOAN portfolio enormously with regard to high-end products and emphasizes our  
34 leading position in the electron microscopy market."

35 The RISE Microscope provides all functions and features of a stand-alone SEM and a confocal  
36 Raman microscope. Both SEM and Raman are high-resolution imaging techniques with sub-  
37 nanometer and diffraction limited 200 - 300 nanometer resolution, respectively. In Raman  
38 imaging mode the sample can be scanned through a range of 250  $\mu\text{m}$  x 250  $\mu\text{m}$  x 250  $\mu\text{m}$ .  
39 RISE Microscopy pairs ease-of-use with exceptional analyzing benefits and is therefore suited  
40 to a large variety of applications such as nanotechnology, materials science, and life science.

41 WITec and TESCAN have jointly developed the RISE Microscope within the framework of the  
42 UnivSEM project. UnivSEM receives funding from the European Union Seventh Framework  
43 Program (FP7/2007-2013) under grant agreement n° 280566. Companies, universities and  
44 research institutes from the Czech Republic, Germany, and Switzerland contribute to the  
45 project. The EU-project supports the development of supplementary analysis tools for  
46 scanning electron microscopes.

#### **Text information:**

538 words; 3,739 characters (with blanks)

#### **Images:**

##### Figure 1: The RISE Microscope

The correlative RISE Microscope combines a stand-alone electron microscope and confocal Raman microscope. Through RISE Microscopy, ultra-structural and molecular images of a sample can be for the first time generated and correlated with one instrument.

Image Download:

[www.witec.de/assets/Uploads/Images/WITec\\_TESCAN\\_RISE\\_Microscope\\_300dpi\\_590x1180pixels.jpg](http://www.witec.de/assets/Uploads/Images/WITec_TESCAN_RISE_Microscope_300dpi_590x1180pixels.jpg)

##### Figure 2: RISE Application Example

RISE Microscopy on a geological sample (diorite). Top: SEM image overlaid with the Raman image. The different colors in the Raman image illustrate the various molecular compounds. Raman image: 100  $\mu\text{m}$  x 100  $\mu\text{m}$ , 300 x 300 pixels = 90,000 spectra, integration time: 34ms/spectrum. Bottom: The corresponding color-coded Raman spectra display each molecular compound of the sample.

Image Download:

[www.witec.de/assets/Uploads/Images/WITec\\_TESCAN\\_RISE\\_Microscopy\\_on\\_GeologicalSample\\_300dpi\\_915x1485pixels.jpg](http://www.witec.de/assets/Uploads/Images/WITec_TESCAN_RISE_Microscopy_on_GeologicalSample_300dpi_915x1485pixels.jpg)

Figure 3: RISE Application Example.

Left: Electron microscopic image of a graphene sample. Middle: Color-coded Raman image of the same sample area. The colors display the graphene layers and wrinkles. Right: Overlay of the ultra-structural electron microscopic image and the chemical Raman image.

Image Download:

[www.witec.de/assets/Uploads/Images/WITec\\_TESCAN\\_RISE\\_Microscopy\\_on\\_Graphene\\_300dpi\\_1180x384pixels.jpg](http://www.witec.de/assets/Uploads/Images/WITec_TESCAN_RISE_Microscopy_on_Graphene_300dpi_1180x384pixels.jpg)

**About TESCAN:**

The leading provider of scientific instrumentation is well known for its innovation and openness to work with researchers and customizing applications to fit specific analytical needs. TESCAN's product range includes thermal emission systems, LaB<sub>6</sub> systems, field emission systems, FIB and Plasma FIB systems. The TESCAN brand has, within 23 years of its existence, built a formidable reputation; 1600+ SEMs installed in over 60 countries are a testament to TESCAN first-class quality and proven technology.

TESCAN ORSAY HOLDING is a multi-national company established by the merger of the Czech company TESCAN, a leading global supplier of SEMs and focused ion beam workstations, and the French company ORSAY PHYSICS, a world leader in customized Focused Ion Beam and Electron Beam technology.

**About WITec:**

WITec is a leading manufacturer of confocal and scanning-probe microscopes for state-of-the-art Raman, Atomic Force (AFM), and Scanning Near-Field Optical Microscopy (SNOM). WITec's headquarters is located in Ulm, Germany, where all WITec products are developed and produced. Branch offices in USA, Japan, Singapore, and Spain ensure a worldwide sales and support network. From the company's founding in 1997, WITec has been distinguished by its innovative product portfolio and a microscope design that enables combinations of the various imaging techniques within one system. An exemplar of the company's breakthrough development is the world's first integrated Raman-AFM microscope. To this day, WITec's confocal microscopes are unrivaled in sensitivity, resolution and imaging capabilities. Significant innovation awards document WITec's enduring success and innovative strength. For more information, please visit [www.witec.de](http://www.witec.de).

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