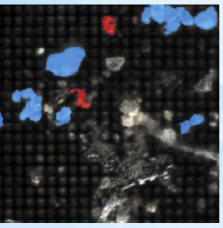
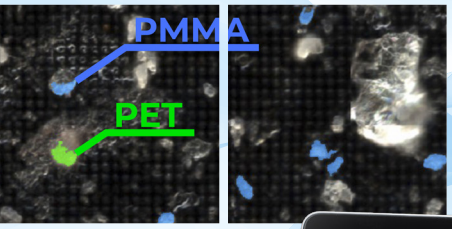
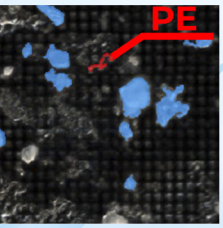
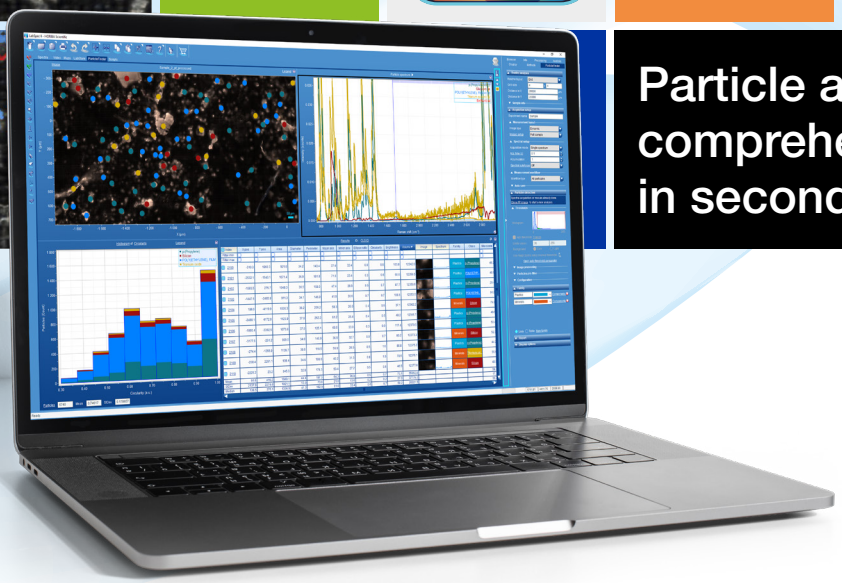
HORIBA

ParticleFinder™: Automatic Particle Location and Raman Chemical ID







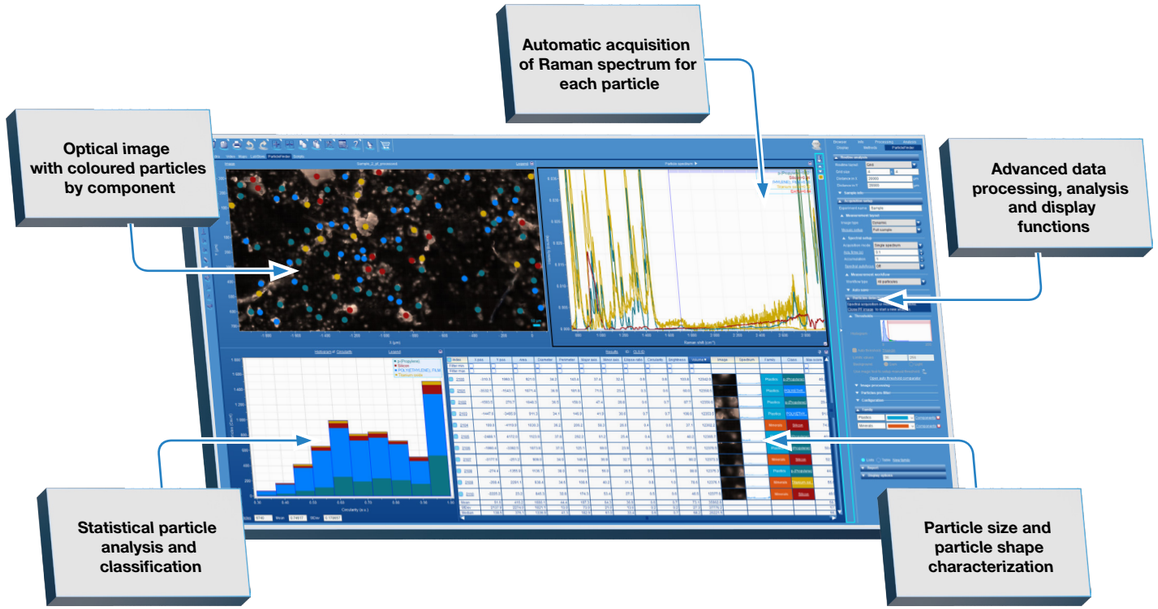


Particle analysis to comprehensive reports in seconds

JOBIN YVON Technology

Fast, automated, and accurate method to measure, ID and classify particle samples

Particle identification and quantification is a constant challenge in many application fields. From pharmaceutical laboratories investigating APIs and excipients, to analysts identifying contaminants trapped on a filter (whether from a motor or from river water) all users need unequivocal results. Consequently, morphological data alone is not enough, and chemical composition is mandatory. Raman microscopy represents the perfect combination for both. Analyzing the many thousands of particles typically present and processing the data used to be long and tedious. Now HORIBA offers a tool optimized for this work, giving you the confidence of trusted data for your particle research and analysis.



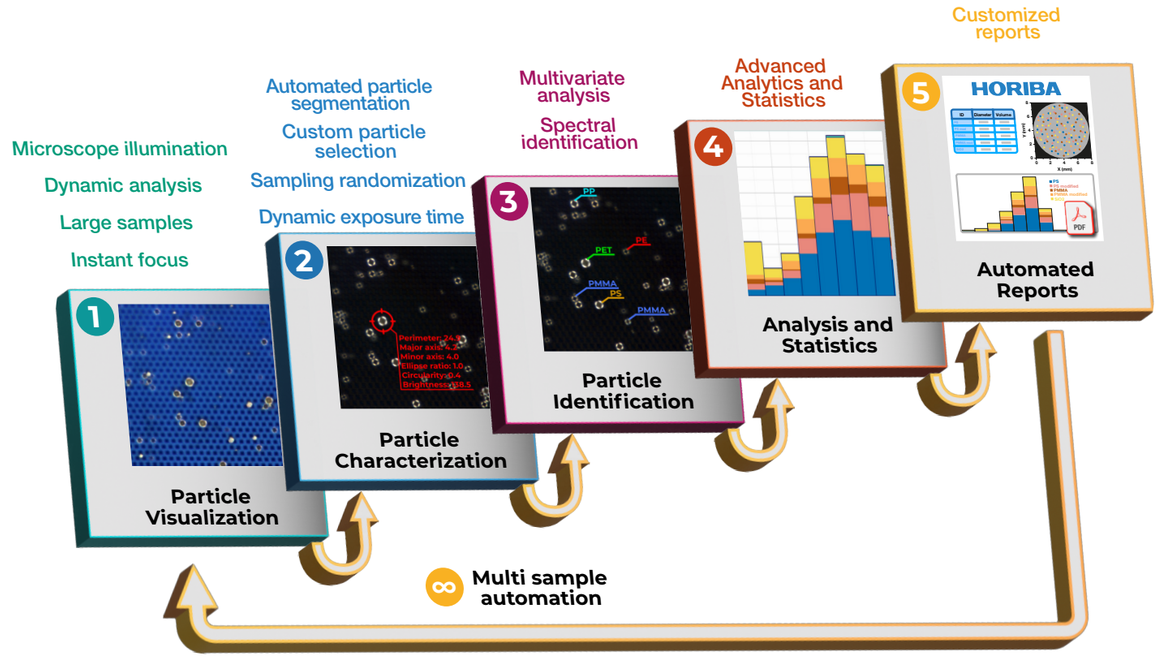
LabRAM Soleil and XploRA PLUS Raman microscope

ParticleFinder is compatible with any HORIBA Raman spectrometer equipped with LabSpec 6 software, a video camera and motorized XY sample stage. With these requirements met, ParticleFinder's Raman analysis can fully exploit the unique capabilities of HORIBA's Raman systems to ensure the most appropriate chemical identification.

HORIBA ParticleFinder is a LabSpec6 application that allows detection, characterization and identification of particles for any application, including microplastics, pharmaceutics and geology. It automates data acquisition and provides advanced statistical information and comprehensive customizable reports.

ParticleFinder's simple and powerful workflow is suitable for R&D and industrial applications, providing optimized speed and automation for routine industry-standard 24/7 measurement.

An automated workflow in five steps



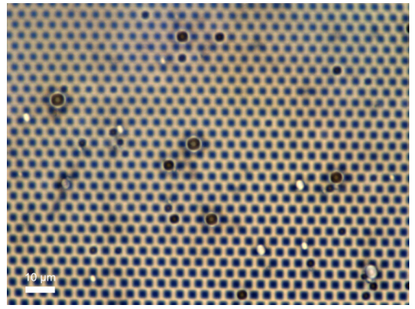
ParticleFinder workflow allows customization and automation of each process step

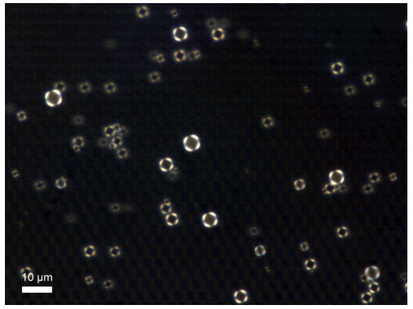
Visualization

Microscope illumination

High-quality images of the samples are acquired using several illumination modalities available in ParticleFinder: BrightField, DarkField, Cross polarization (BrightField with visible polarizers in cross configuration), Epifluorescence, Transmission and DIC.

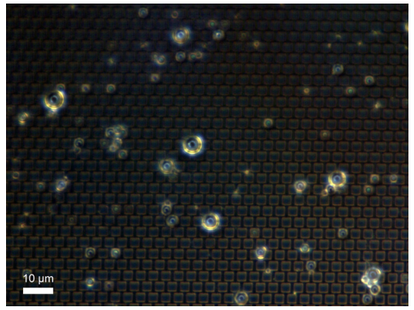
BrightField

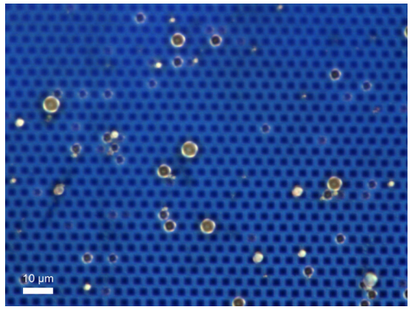




Cross polarization

DarkField



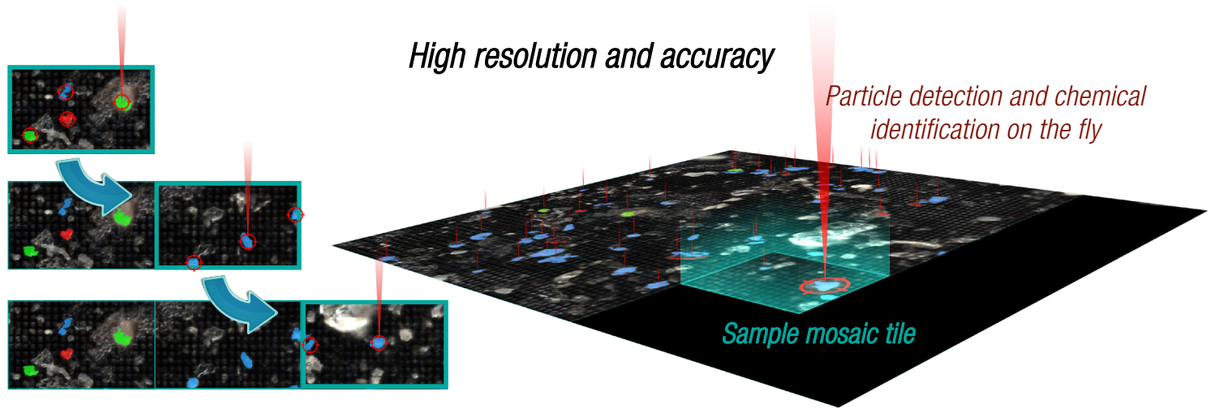


DIC

Dynamic analysis

In addition to the standard **“Static” workflow** that collects the full sample image first before performing the particle detection and spectral characterization, ParticleFinder introduces the **“Dynamic” workflow**, allowing acquisition and processing of sample mosaic tiles (single field of view) in real time, providing particle detection and chemical identification on the fly, as the sample mosaic is acquired.

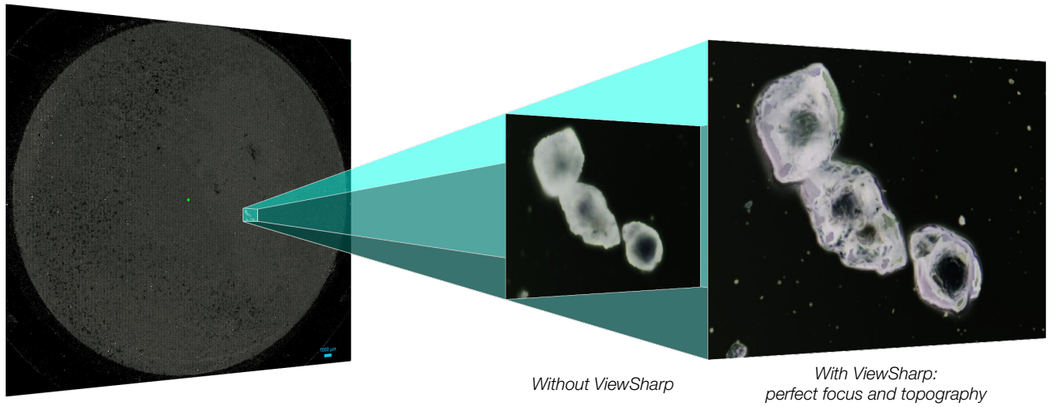
This unique feature allows images to be processed with the highest resolution, and minimizes the time between particle location and spectrum acquisition. The result is maximum reliability, confidence and accuracy by reducing the impact of changing environmental conditions through the measurement.



Large sample

ParticleFinder allows areas of any size to be processed, through on-the-fly measurements of unlimited fields of view at maximum resolution.

The most common samples such as polycarbonate coated, or silicon filters (13 mm, 25 mm, 42 mm) can be easily accommodated.



The seamless mosaic picture of a 42 mm sample. Thanks to Raffaella Mossotti from CNR STIIMA.

Instant focus

From this large sample images, ViewSharp™ focus stacking and topography analysis guarantees the highest image quality, and allows instant focus on each of the particles during the spectral analysis.

Without ViewSharp

With ViewSharp: perfect focus and topography

Particle Characterization

Automated particle segmentation

ParticleFinder features advanced particle detection tools, including fully automated particle detection algorithms, suitable for a wide variety of sample types. Full morphological information is automatically provided for each particle, including area, perimeter, diameter, minor/minor axes, ellipse ratio, circularity, brightness and volume estimation.

Custom particle selection

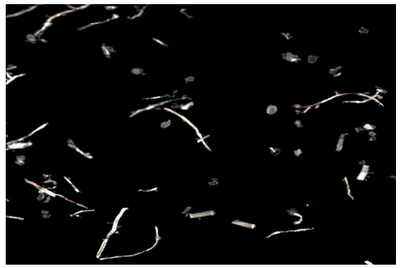
Intuitive particle pre-filtering based on the morphological information listed above allows fast exclusion of specific particle groups from the chemical identification step. This functionality allows easy optimization of the number of particles to be measured, thus reducing the total measurement time.

Sample randomization

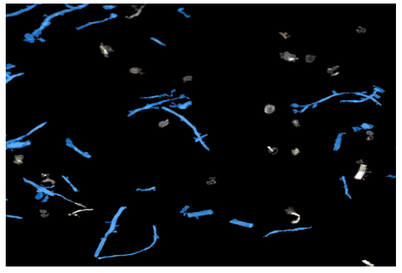
Obtain statistically significant sample analysis more rapidly by randomly examining a representative fraction of the particles. Randomization can be applied to the entire sample, with automated stop criteria, such as a minimum number of detected particles, sample surface coverage, or elapsed time.

Dynamic exposure time

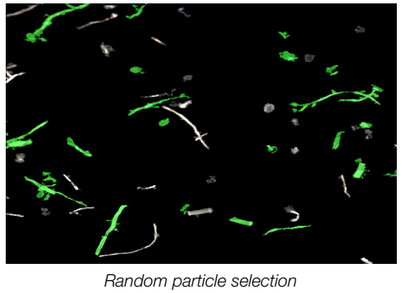
Get access to fastest measurement time per particle using the Autoexposure function. Automatically optimize the Raman exposure time with respect to the individual Raman signal of each particle in the sample.



Particles automatically isolated from background



“Fibers only” custom particle selection



Random particle selection

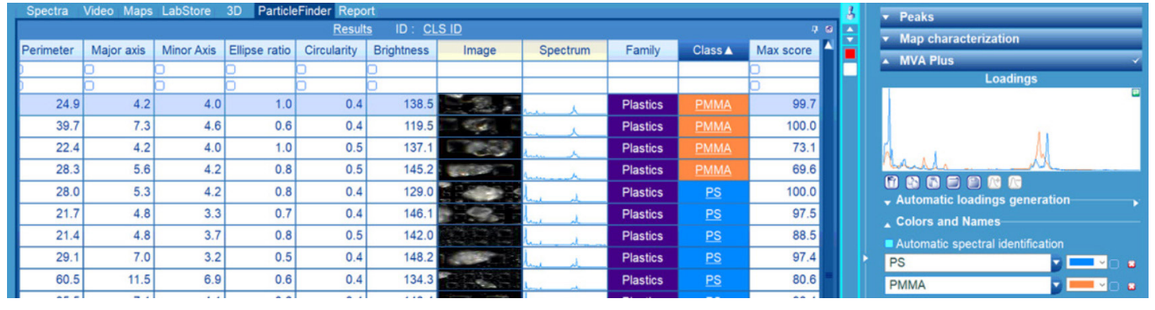
Identification

Particle analysis and classification

Combining morphological and chemical information is fundamental for accurate results.
ParticleFinder benefits from the LabSpec 6 integrated classification, univariate or peak fitting tools, or from the power of the optional MVAPlus app for advanced Multivariate Analysis, automatical extraction of the pure component spectra and classification of the particles. Particles can also be classified from their morphological information, such as fibers or beads, or by their color.

Particle identification

LabSpec6, coupled with the IDFinder app, enables immediate identification of each particle by searching specialized spectral libraries. IDFinder incorporates both HORIBA and S.T.Japan spectral libraries, providing access to over 22,000 spectra organized within specific libraries, ensuring precise results. Users can create custom libraries tailored to their specific identification needs, which can be combined with commercial libraries.



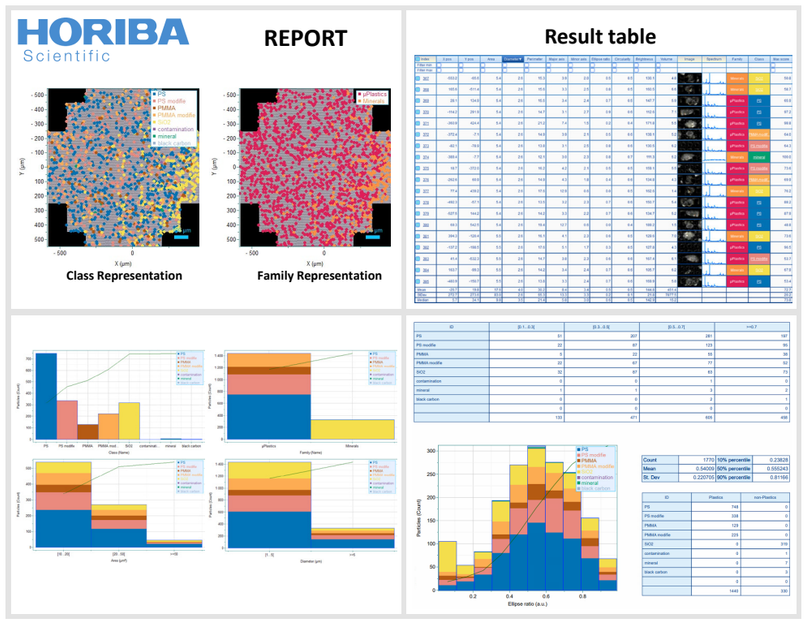
Statistics and Reporting

Generate meaningful statistics from your particle measurements

Statistical results can be customized to present, as tables or stacked histograms, any of the morphological and chemical parameters, including area, perimeter, diameter, minor/major axes, ellipse ratio, circularity, brightness, volume and mass estimation, chemical identification and family.

Reports are automatically generated from fully customizable report templates, including images colored by ID, tables, histograms and custom statistics.

All the data and statistics can be exported in open format to be used in different software for further investigation and analysis.



Industry-ready

Maximized efficiency and throughput with 24/7 measurements and compliance statistics & reports

Automation

Batch mode

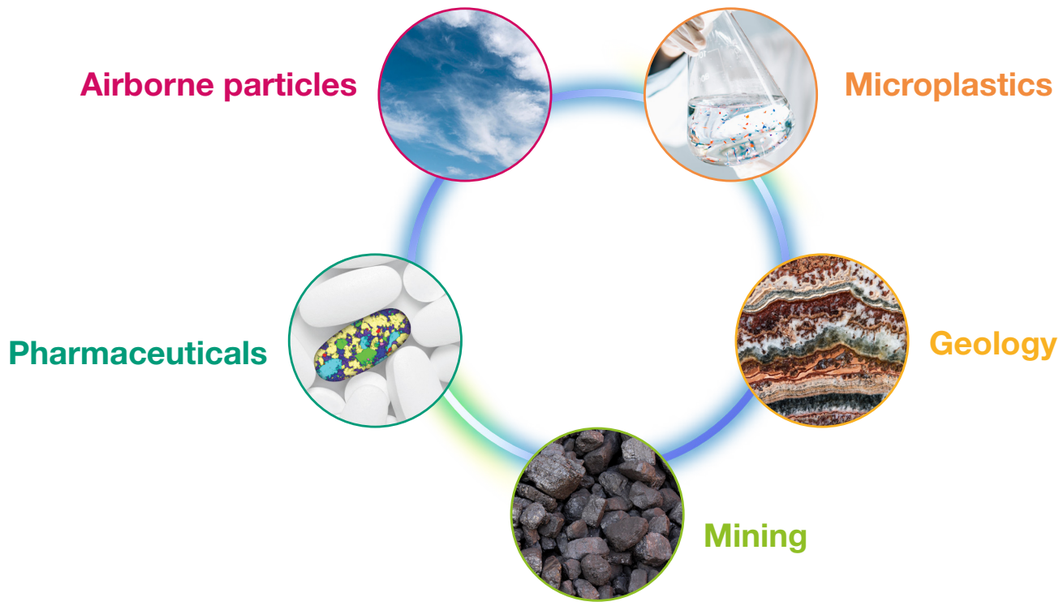
Set up your measurements for multiple samples at once, using the HORIBA sample holders, or any multi-sample support.

ParticleFinder supports any design of sample holders fitting on the motorized stage and provides fully automated measurements for 24/7 operation.

ParticleFinder makes simple, automated, and precise particle sample analysis, thus making research methods suitable for deployment in process labs.

ParticleFinder processes samples 24/7

Typical examples where ParticleFinder offers enormous advantages include the analysis of airborne particles, microplastics and contaminants on filters, characterization of mineral grains for geological and mining exploration, and investigation of pharmaceutical ingredients and mixtures.



Contact Us

France: Tel. +33 (0)1 69 74 72 00
USA: Tel. +1 732 494 8660
Japan: Tel. +81(75)313-8121
Germany: Tel. +49 (0) 6251 8475 0
UK: Tel. +44 (0)1604 542 500
Italy: Tel. + 39 06 51 59 22 1
China: Tel. +86 (0)21 6289 6060
Singapore: Tel. +65 (6) 745-8300
Taiwan: Tel. +886 3 5600606
India: Tel. +91 (80) 4127 3637
Brazil: Tel. +55 (0)11 2923 5400
Other: Tel. +33 (0)1 69 74 72 00

www.horiba.com/scientific
info.sci@horiba.com

Follow Us

JOBIN YVON Technology

HORIBA

info.sci@horiba.com

www.horiba.com/scientific

USA: +1 732 494 8660
UK: +44 (0)1604 542 500
China: +86 (0)21 6289 6060
Taiwan: +886 3 5600606
France: +33 (0)1 69 74 72 00
Italy: +39 06 51 59 22 1
India: +91 (80) 4127 3637
Brazil: +55 (0)11 2923 5400
Germany: +49 (0) 6251 8475 0
Japan: +81(75)313-8121
Singapore: +65 (6) 745-8300
Other: +33 (0)1 69 74 72 00