

Maximilian Trapp

HORIBA Jobin Yvon GmbH, Hans-Mess-Str. 6, 61440 Oberursel, Germany
maximilian.trapp@horiba.com

HORIBA NanoGPS: POI Relocation for Multimodal Microscopy

In modern analytical workflows, the ability to accurately relocate points of interest (POIs) on heterogeneous samples across multiple microscopy and characterization platforms is essential for comprehensive multimodal analysis. HORIBA's NanoGPS technology addresses this challenge by providing a robust, vendor-agnostic solution that streamlines POI relocation for techniques such as Raman microscopy, atomic force microscopy (AFM), μ -XRF, and scanning electron microscopy (SEM) [1]. Two complementary implementations of NanoGPS are available: (1) A NanoGPS tag—a diminutive silicon chip bearing a fine-scale coordinate pattern—is affixed adjacent to the sample. This tag is transported in tandem with the specimen and, once imaged, can be read by the NavYX Connect software to establish an absolute coordinate frame in which all POIs are registered. (2) For HORIBA Raman microscopes equipped with LabSpec software, the SampleXY module can be used in place of a NanoGPS tag. In this approach, two or three reference points on the sample surface are acquired, defining a sample-specific coordinate system that enables precise POI relocation via the NavYX Plug-in.

We demonstrate the efficacy of NanoGPS in three representative case studies: (i) geological/mineralogical specimens, (ii) BlackMass particles from lithium-battery recycling streams, and (iii) micro-/nanoplastic particles in biological samples. In each example, NanoGPS facilitated rapid and reliable multimodal microscopy, ensuring that Raman spectra, AFM topographies, μ -XRF elemental maps, and SEM micrographs could be correlated at identical POIs. Because NanoGPS is independent of microscope or analytical method manufacturer, it offers significant flexibility for laboratories seeking to integrate diverse instrumentation into a unified sample-relocation workflow.

References

- [1] Acher O, Nguyễn T L, Podzorov A, Leroy M., Carles P A, Legendre S (2021) : An efficient solution for correlative microscopy and co-localized observations based on multiscale multimodal machine-readable nanoGPS tags. Meas. Sci. Technol., 32(4), 045402

Figures



Figure 1: HORIBA's NanoGPS solution for POI relocation across SEM, μ XRF, Raman, and other microscopy methods.