

# **Raman imaging - a modern tool for novel materials analysis**

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Raman spectroscopy (and Raman imaging) has become a powerful, noninvasive method to characterize graphene and related materials. A large amount of information such as disorder, edge and grain boundaries, thickness, doping, strain and thermal conductivity of graphene and other 2D materials can be learned from the Raman spectrum and its behavior under varying physical conditions

In this work we compare and contrast the different solutions for maintaining focus and conducting Raman imaging on 2D materials with uneven, complex surfaces. We describe and illustrate the application of the new LiveTrack™ dynamic focus tracking technology, which not only provides in-focus Raman images of the most challenging samples but also topographic information, allowing three dimensional surface Raman images to be generated.

We discuss and present data on a range of extremely difficult samples including graphene on a Cu foil, a sample that is rough on a micrometer length scale. We will demonstrate dynamic measurement of a polyethylene pellet undergoing phase transitions in a temperature cell, demonstrating that LiveTrack can be used to maintain focus in moving systems.

As a complete picture of novel 2D materials characterization (like ReS<sub>2</sub>) a new tool of low frequency Raman imaging will be shown, including share modes and breathing modes analysis in a wide range of temperatures.