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Wafer: A dedicated application

As semiconductor research expands toward novel materials and increasingly sophisticated device architectures, characterization becomes the critical bridge between innovation and manufacturing. Robust characterization strategies are needed to evaluate material quality, uniformity, reproducibility, and performance across entire wafers before technologies can be scaled to high-volume production. In this context, Raman and photoluminescence mapping provide powerful, non-destructive approaches to probe key material properties such as stress and strain, crystal quality, defects, doping variations, composition, and optical response.

This poster presents an integrated software application, “Wafer”, dedicated to Raman and photoluminescence analysis of wafers up to 300 mm in diameter, enhancing the capabilities of the HORIBA LabRAM Odyssey Semiconductor platform. “Wafer” streamlines measurement setup, enables live data processing, provides instant statistical summaries, offers advanced data visualization tools, and supports automatic customizable report generation.

By combining automated wafer-scale acquisition with comprehensive data analysis, this approach facilitates the systematic characterization of semiconductor materials and devices, bridging advanced laboratory metrology with high-volume process development and manufacturing environments.

Figure

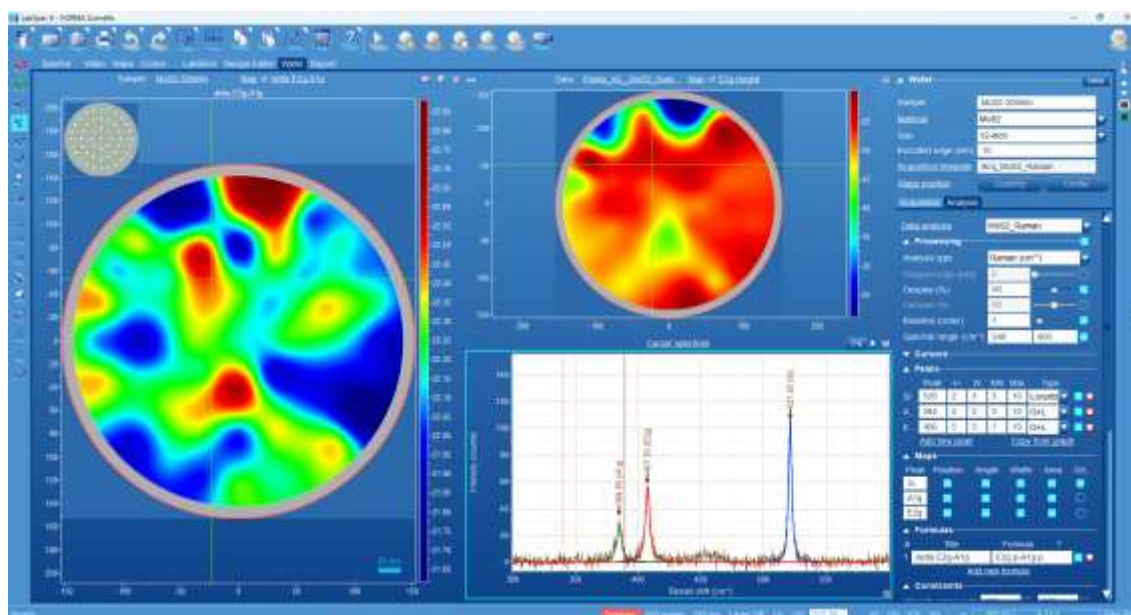


Figure 1: Wafer screen upon acquisition of Raman 49-point map of a 12" MoS₂ wafer (courtesy of IMEC).