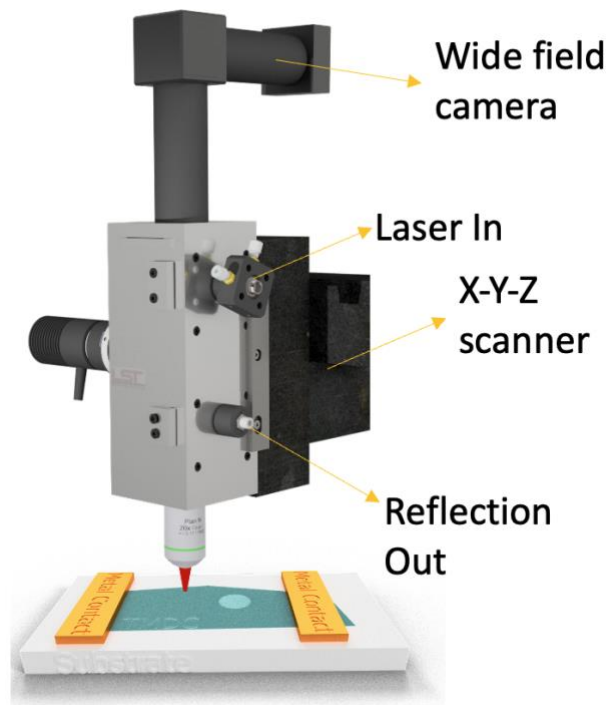




SCANNING PHOTOCURRENT MICROSCOPY – HOW IT WORKS

Move the microscope head. Keep the sample in place.

Unlike conventional stage-scanning approaches, LST SPCM moves the compact confocal head in X, Y and Z. Electrical contacts, sample-environment hardware and the specimen coordinate system remain undisturbed while optical and electrical response maps are formed.



01 NAVIGATE

Locate the device and define the region of interest in a live widefield view.

02 MOVE THE HEAD

Scan the confocal microscope head over a stationary, contacted sample.

03 CORRELATE

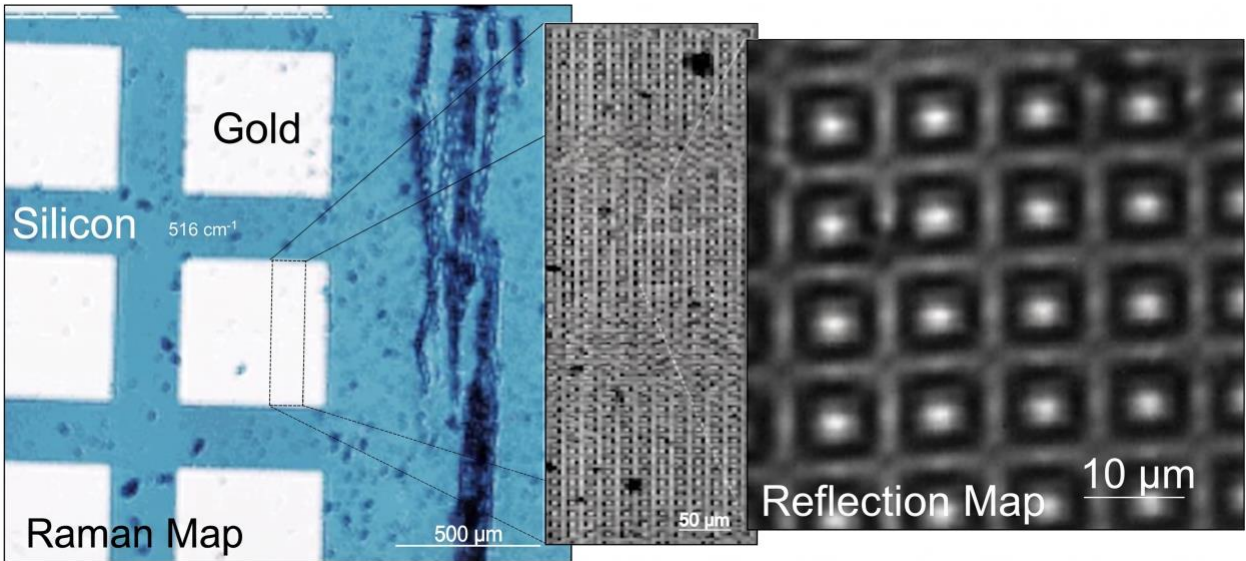
Build synchronized photocurrent, reflection and optical-power records pixel by pixel.

MODULARITY STARTS WITH A STATIONARY SAMPLE Probe needles, device wiring, cryostats, hotplates and custom fixtures can stay mechanically referenced while the scanning head is paired with the motion system the application requires.

SCALE WITHOUT MOVING THE SAMPLE

From nanometer-scale motion to meter-scale reach

Because scanning motion belongs to the microscope head, the same compact optical core can be paired with different positioning architectures. The standard closed-loop XYZ configuration combines 25 nm commanded steps with 25 mm travel per axis, custom long-travel or gantry integration can extend the accessible scale toward meter-class applications.



Multiscale mapping demonstration. A 500 µm Raman map narrows through a 50 µm view to a 10 µm reflection map, linking large-area navigation with localized optical detail.

ONE ARCHITECTURE, MANY MOTION SYSTEMS A moving microscope head can be integrated with compact XYZ scanners, long-travel stages, gantries or custom mechanics, while the sample remains stationary.

What the moving-head design opens up

- Keep contacted devices, probe needles and environmental hardware fixed throughout a scan.
- Address samples and assemblies that are impractical to place on a conventional microscope stage.
- Preserve spatial registration across photocurrent, reflection, Raman or other modular measurement channels.

Scale claims refer to the modular positioning architecture. Travel, minimum commanded motion, optical resolution and accuracy depend on the selected mechanics, optics and operating environment and are not simultaneous specifications across all configurations.

PUBLISHED APPLICATION · METALLIC 3R-NbS₂

Simultaneous spatial maps connect an optical image of the device to its reflected-light structure and measured photocurrent response.



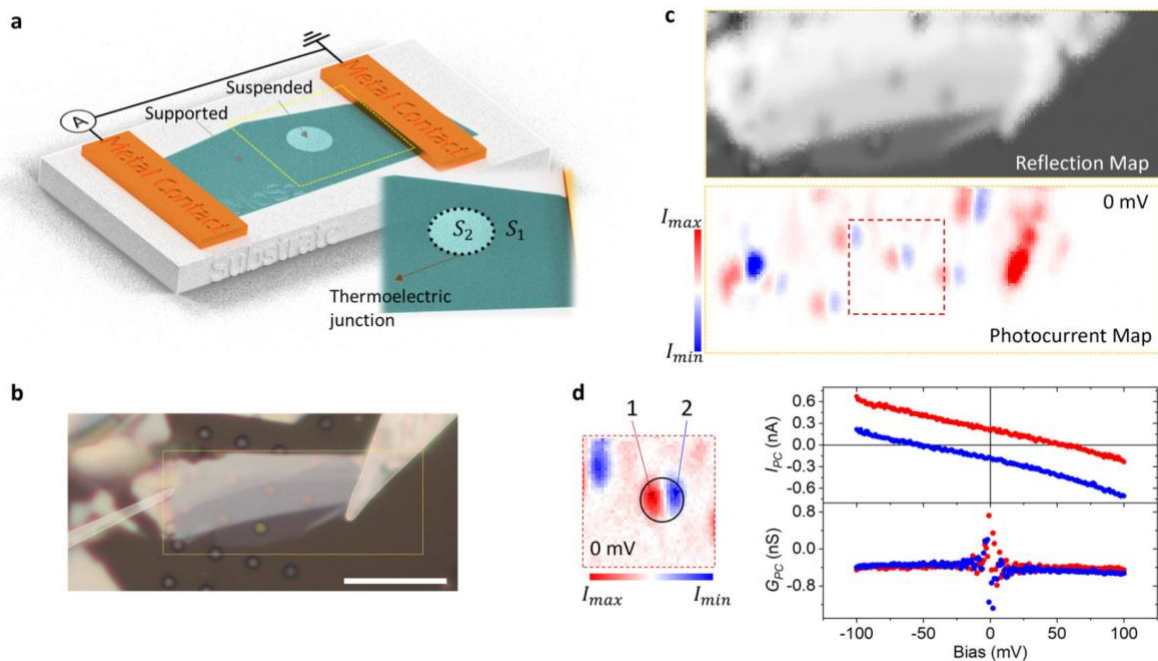
Metallic 3R-NbS₂ device. Spatially resolved reflection and photocurrent mapping reveals localized photoresponse at metal/NbS₂ interfaces.

Source: N. Mehmood, H. R. Rasouli, O. Çakıroğlu and T. S. Kasirga, Physical Review B 97, 195412 (2018). [Article \(DOI\)](#)

WHAT THE MAP ADDS The optical view shows the device, the reflection map registers its spatial structure, the photocurrent map identifies where the electrical response is generated.

PUBLISHED APPLICATION · SUBSTRATE-ENGINEERED MoS₂

Spatially aligned reflection and open-circuit photocurrent maps make it possible to relate supported and suspended regions to a bipolar thermoelectric response.



Substrate-engineered MoS₂ thermoelectric junction. Simultaneously acquired reflection and photocurrent maps using the LST SPCM platform. The spatially resolved bipolar response reveals thermoelectric junctions formed between supported and suspended regions of the MoS₂ crystal.

Source: M. Razeghi et al., npj 2D Materials and Applications 7, 36 (2023). [Article \(DOI\)](#) © The Authors 2023, CC BY.

CORRELATION IS THE RESULT The paired maps connect local optical contrast with the sign and magnitude of photocurrent across the supported-suspended boundary.

CONFIGURE YOUR SYSTEM

Choose the motion, optics and measurement chain

The brochure presents the platform at a glance. The companion LST SPCM Technical Data Sheet provides the full optical, electrical, scanning and integration specifications, final component selection is confirmed in the system proposal.

CORE CAPABILITY	SUMMARY
Moving element	The microscope head moves; the sample and its connections remain stationary
Standard XYZ travel	25 mm per axis (XYZ)
Positioning	Closed-loop, 25 nm commanded step and 100 nm repeatability
Scan modes	Area, arbitrary-orientation Flexi-Scan, line and point
Correlated acquisition	Photocurrent, reflection, widefield image and laser-power record

Configuration areas

OPTICAL wavelength · fiber coupling · objective · filters · polarization

ELECTRICAL lock-in detection · preamplification · bias · device cabling

SAMPLE ENVIRONMENT probe access · cryostat or hotplate compatibility · working distance · mechanical envelope

Discuss your SPCM application with LST

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Specifications may change as the platform evolves. The signed quotation and configuration sheet define the final scope of supply and performance commitment.