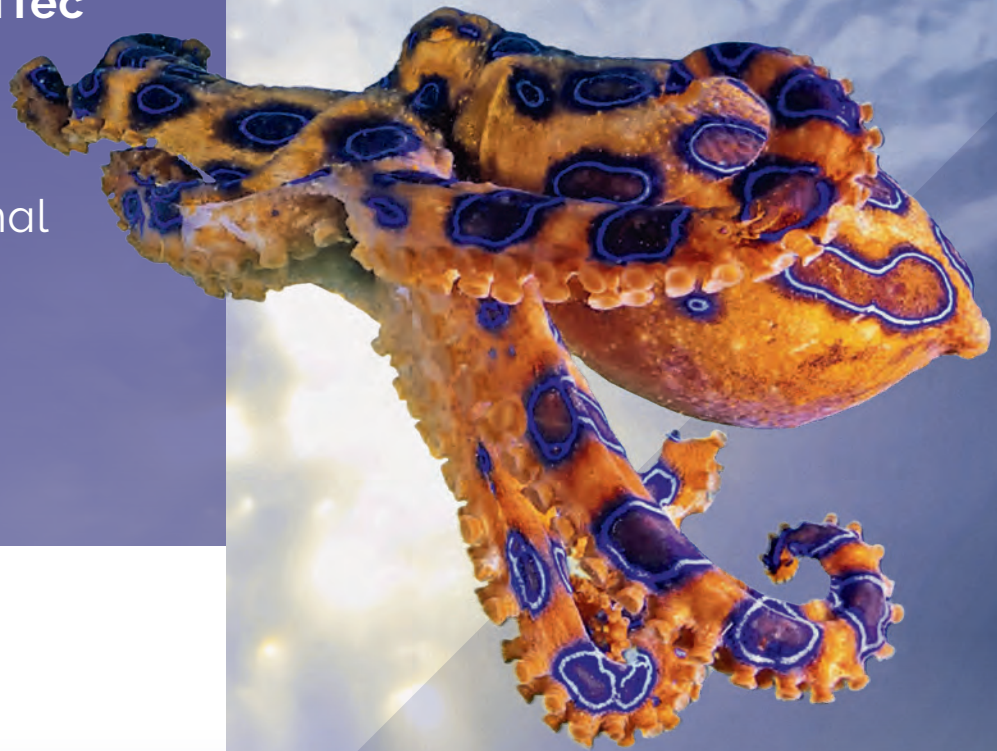# Dive Deep into Material Properties with Polarization-resolved Raman Microscopy

Reveal hidden details with automated polarization control options for WITec Raman microscopes:

- Structural orientation
- Symmetry of vibrational modes
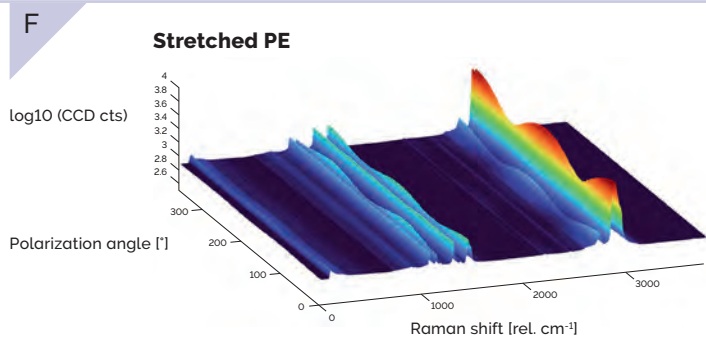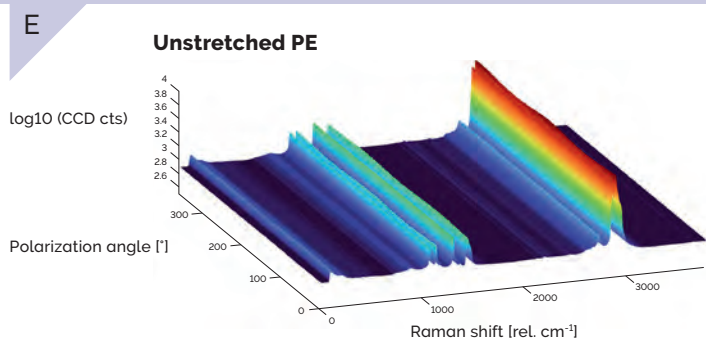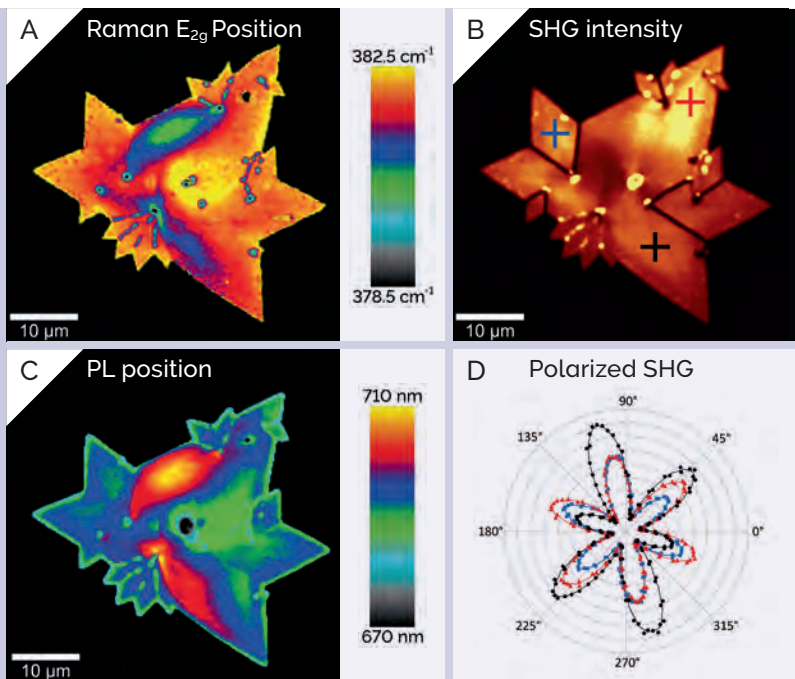- Chirality
- Optical anisotropy

Blue-ringed octopuses can perceive polarized light, which gives them an advantage in detecting predators and prey in the murky twilight of their natural habitat.

https://raman.oxinst.com/polarization

Dive Deep into Material Properties with Polarization-resolved Raman Microscopy

Benefit from unique features:

- Independent/coordinated polarizer/ analyzer rotation for automated series measurements
- Sub-degree angular positioning
- Automatic recording of filter angles in measurement metadata
- Configurable and separable excitation and detection beam paths
- 1/4 waveplate module for circular polarization
- EquiLight optic for polarization-independent spectral intensity

A — Raman E_{2g} Position

382.5 cm^{-1} / 378.5 cm^{-1}

10 μm

B — SHG intensity

10 μm

C — PL position

710 nm / 670 nm

10 μm

D — Polarized SHG

E — Unstretched PE

log10 (CCD cts) / Polarization angle [°] / Raman shift [rel. cm^{-1}]

F — Stretched PE

log10 (CCD cts) / Polarization angle [°] / Raman shift [rel. cm^{-1}]

Correlative Raman imaging, SHG, PL, and Polarization Analysis of Mono-layer MoS$_2$
A: Raman images showing the frequency of the E_{2g} mode
B: SHG intensity image
C: Photoluminescence image depicting wavelengths
D: Polar plots of the SHG signal as a function of the excitation polarization angle from measurements made at the three positions indicated in **B**.

3D heatmaps of polarization-resolved Raman spectra of polyethylene foil in unstretched **(E)** and stretched **(F)** conditions. The alignment of polyethylene fibers in the stretched foil is visible in the polarization dependency of the Raman intensity at the modes for the symmetrical C-C stretching (1130 rel. cm^{-1}), CH$_2$ bending (1417, 1441 and 1464 rel. cm^{-1}) and C-H stretching (2849 and 2883 cm^{-1}).

Discover WITec's options for polarization-resolved Raman microscopy:
https://raman.oxinst.com/polarization