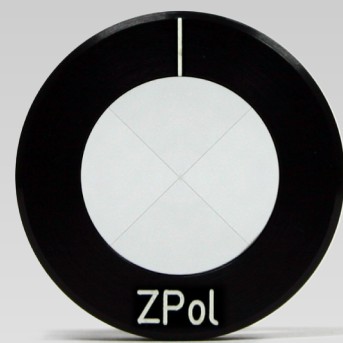


# The polarization of Z



ZPol produces polarization in the direction of light propagation (z-polarization), providing sensitivity to crystal or molecular orientation in 3D.

# ZPol

**Z polarization device**



[www.nanophoton.jp](http://www.nanophoton.jp)

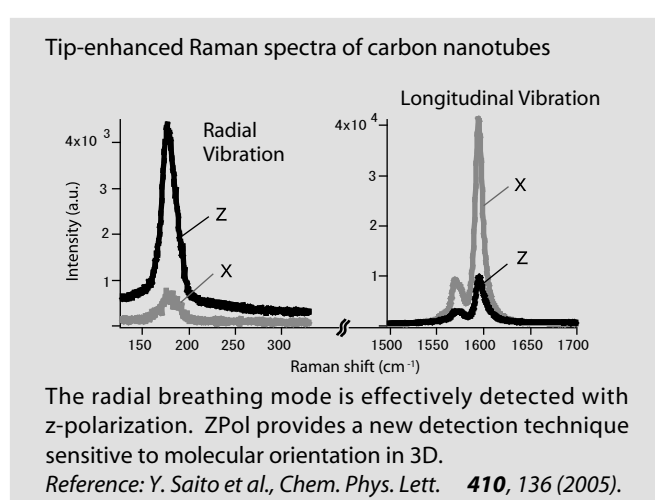


## ZPol<sup>TM</sup> - Producing "z-polarization" -

### Introduction

ZPol produces "z-polarization", light polarization in the direction of its propagation. "Z-polarization" is frequently overlooked as light propagation contains only transverse electromagnetic waves with X, Y polarization. ZPol enables us to obtain 3D orientation of molecules and crystal, unlike conventional polarizers and wave plates.

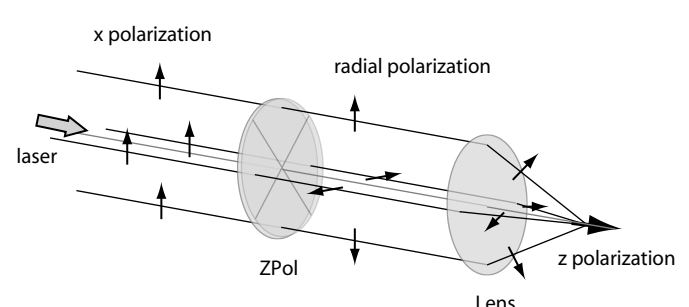
The figure below shows an example of ZPol applications. Raman scattering from carbon nanotubes was measured with x- and z-polarization. The radial breathing mode of the nanotubes is specifically detected by z-polarization.



Courtesy from Nanophotonics lab, RIKEN, Japan

### How to use

Z-polarization is produced by a combination of a ZPol with a high-NA lens. First, linear polarization is incident to the ZPol and is converted to radial polarization. Secondly, the focal spot given by the lens has strong z-polarized light resulting from interference of radial polarization at the geometrical focus. By rotating the ZPol, it is also possible to produce azimuthal polarization which does not contain z-polarization at focus.



### Specs

Mount size:  $\Phi=25\text{mm}$   
 Clear aperture :  $\Phi=10\text{mm}$   
 Wavelength: Specify one wavelength between visible and near infrared.  
 Usable with pulse lasers: ns, ps and fs.

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