

The fastest Raman imaging with line scanning technique

ODE Takahiro, OTA Taisuke, KOBAYASHI Minoru

Nanophoton Corp.

A-509 CASI, Osaka Univ.

2-1 Yamadaoka, Suita, Osaka, 565-0871, Japan

E-mail: ode@nanophoton.jp

Web: <http://www.nanophoton.jp>

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1. Laser scanning Raman microscope

We have developed a laser scanning Raman microscope featuring confocal optics. The laser Raman microscope does not require any staining technique, because it observes Raman scattering light instead of fluorescent light. Therefore, in-vivo observation is possible for living biological specimen. Substance identification is also possible with the laser Raman microscope since the Raman spectrum represents the vibration information of molecules. The laser Raman microscope also reveals the three dimensional structure of living cell by capturing optical sectioned Raman spectrum.

2. The line scanning contributes 100 times faster imaging

Due to the weakness of Raman scattered light, conventional micro-Raman systems took a long time for one point measurement and scanned the sample point by point to take images. The Raman microscope with line scanning technique has noteworthy capability to accelerate the imaging speed. The line scanning technique contributes 100 times faster scanning

Figure 1 shows a Raman image of HeLa Cells. The distributions of (a) lipid droplets and (b) mitochondria are clearly shown. Fig. 1(c) shows concentration of protein that gives shape of the cells. Any staining technique was used to obtain these images. Only a few minutes were required for imaging.

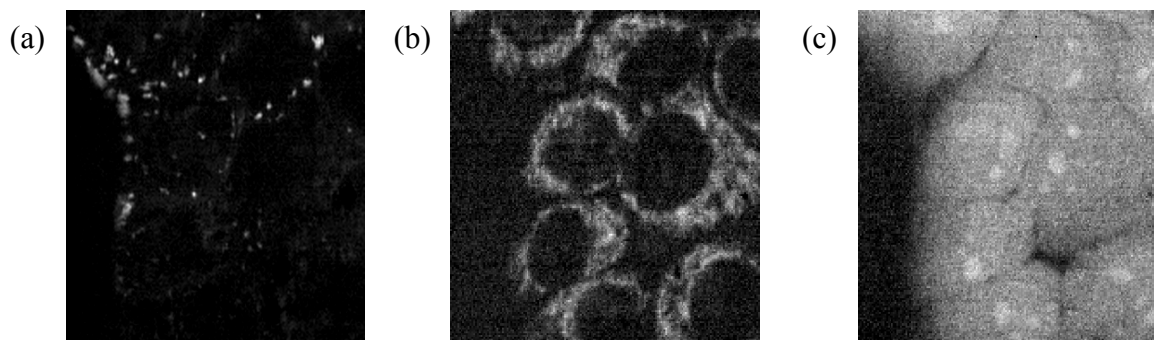


Fig. 1 Raman images of HeLa cells without any staining.