

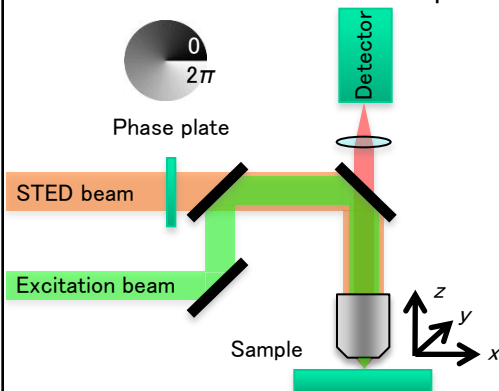
Visualization of nanostructures by super-resolution fluorescence microscopy

Associate Professor Jun-ichi Hotta

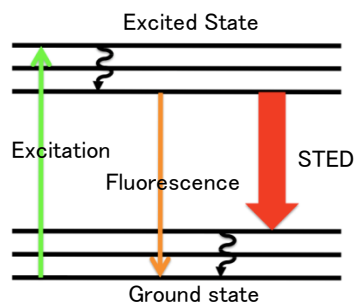
Illustration

Super-resolution fluorescence microscopy (STED microscopy)

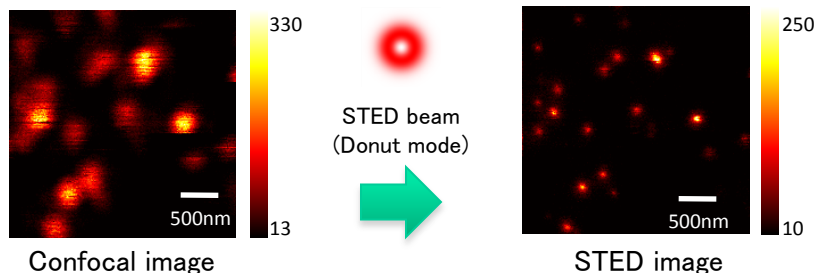
Schematic of STED microscope



Jablonski diagram



Fluorescence images of single molecules



Application of super-resolution microscopy

Nanoimaging

Cell, polymer
light emitting device

Nanofabrication

Organic material
Polymer

Content:

Optical microscopy has been one of the most important tools to observe fine structures in the field of biology, chemistry, physics, etc. Although optical microscopy is nondestructive and convenient to use, its resolution is limited compared to other observation methods, such as scanning electron microscopy, atomic force microscopy, scanning tunneling microscopy, etc. An intensive effort in the field of optics is dedicated to the realization of high-resolution optical microscopy, and now the so-called “diffraction limit”, which had been believed to be a fundamental limit of optical microscopy, could be overcome by several approaches. In order to characterize cells, polymers, light emitting devices in nanometer resolution, following research is carried out.

- (1) Single molecule spectroscopy
- (2) Stimulated emission depletion (STED) microscopy
- (3) Localization microscopy

Yamagata University Graduate School of Science and Engineering
Research Interest : Fluorescence nanoscopy

E-mail : hotta@yz.yamagata-u.ac.jp

Tel&FAX : +81-238-26-3032

HP : <http://www.eie.yz.yamagata-u.ac.jp/s/>

