Hokkaido Univ. Technology

Optical antenna

Chiral molecule identification, polarization generator, and optical antenna design method

Overview

Topology optimization is a machine-aided design technique that optimizes material structure and enhances performance. Applying this technique to the design of an optical antenna provides an optical antenna with a nanogap structure with the following features:

Circular Polarization Identification

Responses to left and right circular polarized light can be significantly enhanced for incident circular polarized light. For example, the chiral identification of trace chiral molecules can be achieved using this invention.

Circular polarization generation and control

Circular polarization can be radiated by placing a light source in a gap structure, and the polarization state can be controlled according to the direction of the light source. A polarization-generating device is anticipated.

Product Application

- ☐ The design method for a novel optical antenna
- ☐ Circular Polarization Identification Device for chiral molecules
- ☐ Polarization Generator

IP Data

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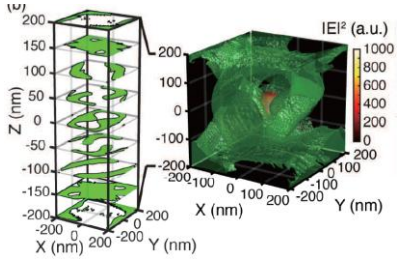
Admin No. : HK24-018

Features・Outstandings

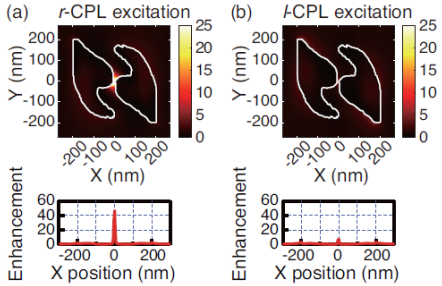
< Novel Design Method for an optical antenna>



Optical antenna having nanogap structure

A Novel Optical Antenna Design Method Using Topology Optimization

< Circular polarization Identification >

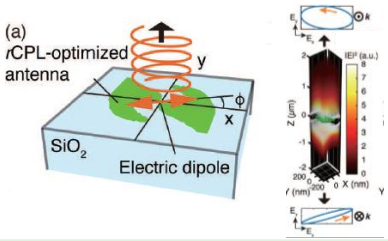


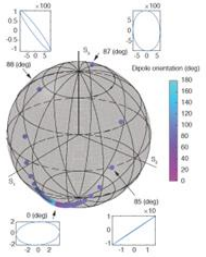
Significantly different responses to r-CPL and l-CPL

⇒ Circular Polarization Identification Device.

***ex : For chiral molecules**

< Polarization Generator >





A light source is arranged in the nanogap, Circularly polarized light is generated.

Various polarizations can be created by changing the direction of the light source (dipole).

⇒ Polarization Generator

Contact

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