

ABSTRACT

A Raman scattered light enhancement device including a waveguide provided in a photonic crystal (20) made of a semiconductor substrate in which holes (20a) are formed.

5 The waveguide has resonant modes with respect to incident light at a plurality of frequencies. A difference in frequency between one resonant mode and another resonant mode is equal to a Raman shift frequency of the semiconductor substrate. A waveguide forming direction
10 with respect to a crystal plane orientation of the semiconductor substrate is set so as to maximize a Raman transition probability which is represented by electromagnetic field distribution of the two resonant modes and a Raman tensor of the semiconductor substrate.