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[\[Image PDF \(1003K\)\]](#) [\[References\]](#)**Two-Photon Microscopy for the Observation of Internal Defects in Semiconductor Crystals in Three-Dimensions**[Yoshimasa KAWATA](#)¹⁾

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Abstract: We present a method of three-dimensional observation of internal defects in semiconductor crystals for blue lasers by use of two-photon process. We excite photoluminescence by using two-photon process. Since semiconductor materials have intrinsically high absorption in the short-wavelength region, the excitation light of photoluminescence is largely absorbed by the crystals. It is difficult to observe defects in deep regions. Two-photon excitation can overcome this limitation because near-infrared light is absorbed at only the focused point. The excitation light can penetrate into the deep regions of the crystal. We succeeded in observing defects in a ZnSe crystal 200 μm below the crystal surface.

Key Words: [Two-photon excitation](#), [Laser scanning microscopy](#), [Confocal microscopy](#), [Semiconductor material](#), [Wide-gap semiconductor material](#)

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