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**Anti-Stokes Photoluminescence and Enhanced Raman Scattering from InSb Nanodots and Nanowires** TERUMASA HORIUCHI, TSUYOSHI TAMAGAWA, NOBORU WADA, Fac. of Eng., Toyo Univ. — InSb nanodots, nanowires and bulk crystals were examined by conventional micro-Raman and scanning near-field optical microscope (SNOM) systems. InSb nanodots and nanowires examined were fabricated on Si substrates by a vapor-transport method using a focused-ion beam(FIB) system[1]. Surprisingly strong anti-Stokes photoluminescence was found from the samples when a high power laser density (up to $\sim 10^6$ W/cm$^2$) was used. Drastic decrease of the anti-Stokes luminescence with decreasing the sample temperature suggested that phonon-carrier scattering played an important role. Moreover, enhanced second-order Raman scattering was observed, which depended on both the laser power density and samples. We speculate that the second-order Raman enhancement may be caused by the excitons created by photoirradiation. [1] M. Ishizuka, T. Horiuchi and N. Wada, *Narrow Gap Semiconductors*, edited by J. Kono and J. Léotin, Taylor & Francis, 2006, p. 125-130.

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