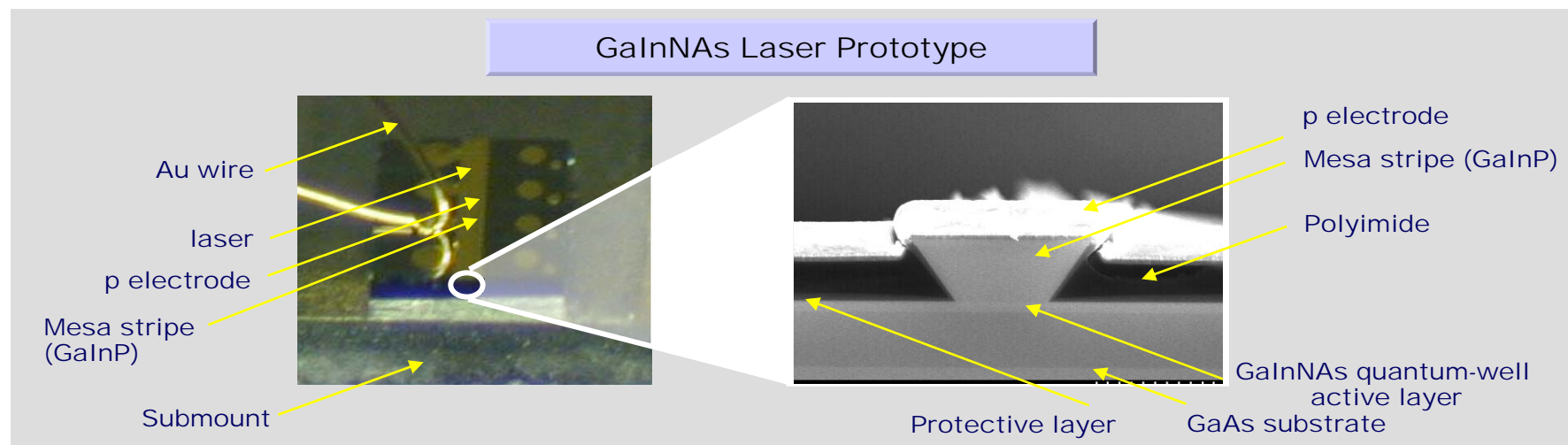


2006/8/24 Release

40-Gbps operation of GaInNAs(Gallium Indium Nitride Arsenide) Semiconductor Lasers Compact, high-speed, low-power consumption transceiver using directly modulated lasers



The Central Research Laboratory of Hitachi, Ltd. has succeeded in high-speed operation at 40 gigabit per second (Gbps) using directly modulated lasers, that is without an external modulator. A semiconductor laser device used in routers and Internet protocol (IP) optical networks which connect routers located within and between buildings, was fabricated using GaInNAs in the active layer. By developing a new method of epitaxial growth suited to GaInNAs, it is possible to achieve 40 Gbps operation with a low threshold current of 4.4 milliamperes, oscillating at the long wavelength range of 1.29 micrometers used in optical fiber communications. As a result, high-speed and low-power optical transceiver modules are expected with this type of directly modulated lasers.

Research results relating to this technology will be presented at the 67th Autumn Meeting of the Japan Society of Applied Physics to be held at the Biwako-Kusatsu Campus of Ritsumeikan University in Shiga, Japan, from 29th August to 1st September; the 14th International Conference on Molecular Beam Epitaxy (MBE 2006) to be held at Waseda University in Tokyo, Japan, from 3rd – 8th September, and the European Conference on Optical Communication 2006 (ECOC 2006) to be held in Cannes, France, from 24th -28th September. This work was partly supported by the National Institute of Information and Communications Technology of Japan.