Quantum Electronics

Studies from University of New Mexico have provided new information about quantum electronics

2009 AUG 12 - (VerticalNews.com) -- "In this paper, a theoretical model is used to investigate the lasing spectrum properties of InAs-InP(113)B quantum dot (QD) lasers emitting at 1.55 mu m. The numerical model is based on a multipopulation rate equations analysis. Calculations take into account the QD size dispersion as well as the temperature dependence through both the inhomogeneous and the homogeneous broadenings," investigators in the United States report. "This paper demonstrates that the model is capable of reproducing the spectral behavior of InAs-InP QD lasers. Especially, this study aims to highlight the transition of the lasing wavelength from the ground state (GS) to the excited state (ES). In order to understand how the QD laser turns on, calculated optical spectra are determined for different cavity lengths and compared to experimental ones," wrote F. Grillot and colleagues, University of New Mexico. The researchers concluded: "Unlike InAs-GaAs QD lasers emitting at 1.3 mu m, it is shown that a continuous transition from the GS to the ES is exhibited because of the large inhomogeneous broadening comparable to the GS and ES lasing energy difference.." Grillot and colleagues published their study in *IEEE Journal of Quantum Electronics* (Spectral Analysis of 1.55-mu m InAs-InP(113)B Quantum-Dot Lasers Based on a Multipopulation Rate Equations Model. *IEEE Journal of Quantum Electronics*, 2009;45(7):873-879). For additional information, contact F. Grillot, University of New Mexico, Center High Technology Materials, Albuquerque, NM 87106, USA. The publisher of the *IEEE Journal of Quantum Electronics* can be contacted at: IEEE-Institute Electrical Electronics Engineers Inc., 445 Hoes Lane, Piscataway, NJ 08855, USA.

Keywords: Emerging Technologies, Nanotech, Nanotechnology, Quantum Dots, Quantum Electronics, University of New Mexico. This article was prepared by Electronics Newsweekly editors from staff and other reports.

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