

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Near Field Measurement of Broad Area Laser Diodes by Utilizing Near-Field Scanning Microscope SOON IL JEONG, JOO IN LEE, Korea Research Institute of Standards and Science, IL KI HAN, YOUNGCHAI YOO, KYOUNG CHAN KIM, JIN DONG SONG, WON JUN CHOI, WON JO CHO, JUNG IL LEE, Korea Institute of Science and Technology, SI HYUNG CHO, Potomac Optronics, MARIO DAGENAIS, University of Maryland, NANOSURFACE GROUP TEAM, NANO DEVICE RESEARCH CENTER TEAM, POTOMAC OPTRONICS COLLABORATION, ELECTRICAL & COMPUTER ENGINEERING TEAM — It is well known that the filamentation in the broad area laser diodes (BALD) is closely related to the linewidth enhancement factor (α -value). While normal α values in the multiple-quantum well (MQW) structure are 2~4, it is expected and calculated that α values in quantum dot (QD) are under 1. This means that the filamentation in the BALD with QD structure would be delayed until higher current level. In this study, we report the difference of near field between QD and QW BALDs by utilizing near-field scanning optical microscope (NSOM). α value in the QD BALD was measured to be around 0.6, while in the QW around 2. It was observed that the BALD with QD kept single mode beam under higher current level than the BALD with QW. This result shows another evidence that QD structure might be more adequate for high power laser diodes with single mode beam characteristics.

Il Ki Han
Korea Institute of Science and Technology

Date submitted: 06 Dec 2005

Electronic form version 1.4