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エピタキシャルリフトオフ(ELO)技術による光素子の薄膜化

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Fabrication of Thinning Optical Devices by Using Epitaxial Lift-off Technology

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Abstract

We have developed a new technology for thinning optical devices for an opto-electronic interconnection module using an epitaxial lift-off (ELO) technique. The thinned optical devices were fabricated by a process of delaminating the GaAs substrate, selectively etching an AlGaAs release layer between the substrate and epitaxial layers with vertical cavity surface emitting lasers (VCSELs). Before delaminating the substrate, we fabricated a deep hole in the substrate to enable light emission at a wavelength of 850 nm through the hole. The fabricated 10-μm-thick VCSELs were mounted and soldered at three electrode positions on the dummy glass substrate using AuSn bumping metal, and showed almost the same opto-electronic characteristics before and after ELO, as well as stable DC performance during continuous operation of up to 1000 hours.

Key Words: *Epitaxial Lift-off (ELO), Active Interposer (AIP), Optical Interconnects, Flip Chip Bonding, VCSEL*