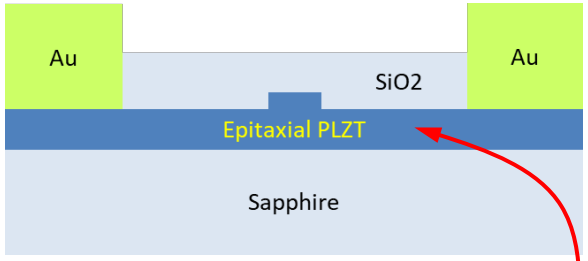
OASys-PON Optical Access Network System

EpiPhotonics

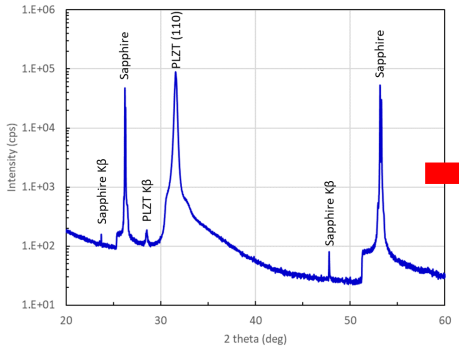
Epitaxial PLZT Thin-film Ultra-fast Optical Modulator with low Vπ at a small form factor

Supported by the Ministry of Internal Affairs and Communications

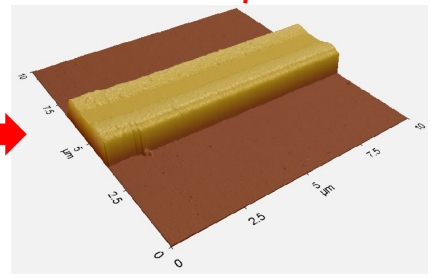
- The ultra-fast MZ optical modulator in single-crystal PLZT thin film, grown by the solid-phase epitaxy pioneered by EpiPhotonics, has been developed based on proprietary PLZT nano-second switch technology.
- An extremely large electro-optical effect, as high as 10 times that of conventional materials, enables ultra-compact, low-voltage driving, very efficient transmission, and high-speed modulation features.
- Various applications are expected for the PLZT optical modulator. Highly oriented PLZT thin film deposition on silicon wafers is also feasible, and integration with silicon photonics could be of great interest.



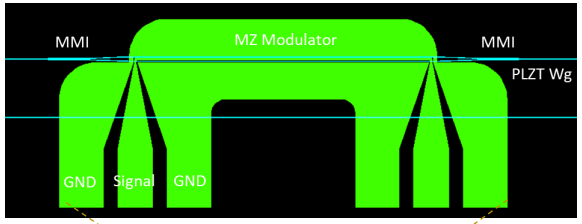
Modulator in epitaxial PLZT thin-film

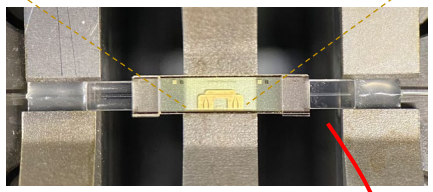


XRD of epitaxial PLZT (in-plane single orientation was verified by phi scan)

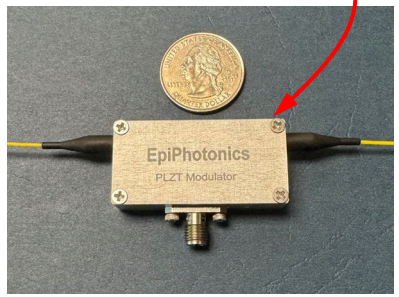


AFM image of very dense/void free PLZT waveguide

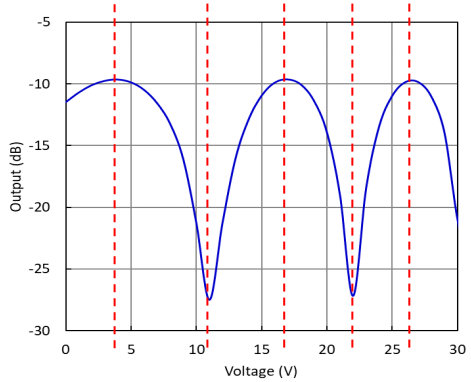




PLZT modulator chip

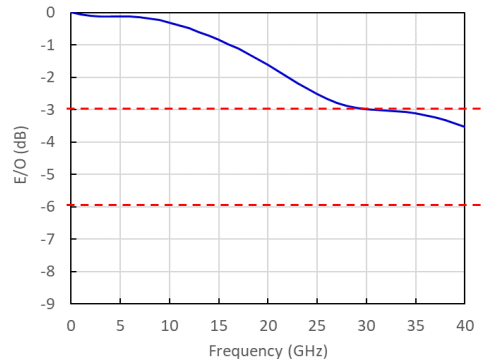


Packaged PLZT modulator



Vπ=4V~7V
@Electrode length= 2 mm

Static voltage response of PLZT modulator



3 dB bandwidth >30 GHz

6 dB bandwidth >40 GHz

Frequency response of PLZT modulator

Contact: Keiichi Nashimoto, sales@epiphotonics.com