

MNTC 特別セミナー

2016/5/19/THU 16:00~17:30



東海大学湘南校舎12号館1階

マイクロ・ナノ研究開発センター

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Development of Photonic Integrated Optical Devices and Components

Optical power splitter is one of the key passive components in subscribes networks of optical communications to split the power of the optical signal into two branches. Silicon- on – insulator (SOI) material is of interest for integrated optoelectronic circuits since it offers the potentiality of monolithic integration of optical and electronic functions on a single substrate. Moreover, the silicon film of silicon-on-insulator (SOI) substrates can be used as a low loss waveguide. A simple technology-compatible design of silicon-on-insulator based 1×2 optical power splitter is proposed. For developing large area Opto-electronic Silicon-on-insulator (SOI) devices, the power splitter is a key passive device. The SOI rib- waveguide dimensions (height, width, and etching depth, refractive indices, length of waveguide) leading simultaneously to single mode propagation.

In this talk how a low loss optical power splitter is designed by using R Soft cad tool and simulated by Beam propagation method, here s-bend waveguides for symmetrical and asymmetrical designs proposed. We concentrated by changing the width of the waveguide for symmetrical and asymmetrical waveguides and observing transmitted power, effective refractive index in the designed waveguide, and choosing the best simulated results and fabricated on silicon-on insulator platform. In this design 1550nm free spacing is used. From the simulated results, we observed symmetrical optical power splitter transmitted power as 0.985W, and for asymmetrical optical power splitter transmitted power as 0.9561W.