

# **Custom Process for Low-Loss Planar Waveguides in Security Applications**





## **Custom Process for Low-Loss Planar Waveguides in Security Applications**

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### **Ultra Low Loss Planar Waveguides and Their Applications**

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Provides a notice of upcoming special issue(s) or section(s) of interest to practitioners and researchers. May also include call(s) for papers.

### **Ultra-Low-Loss Silicon Waveguides for Heterogeneously**

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Integrated ultra-low-loss waveguides are highly desired for integrated photonics to enable applications that require long delay lines, high-Q resonators,



## **Towards monolithic low-loss silicon nitride waveguides on a mature**

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Silicon nitride photonics has enabled a broad class of low-loss integrated devices and chip-scale solutions that benefit from transparency over a wide wavelength range and compatibility

## **Fabrication techniques for low-loss silicon nitride**

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Here, we report the labs-scale process optimization and optical characterization of low-loss tunable photonic integrated circuits for single-photon

## **Ultra Low Loss Planar Waveguides and Their Applications**

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Prospective authors are requested to submit new, unpublished manuscripts for inclusion



in the upcoming event described in this call for papers.

## **Low-loss optical waveguides made with a high-loss material**

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Based on subwavelength gratings, here, we show that it is possible to create broadband, multimode waveguides with very low propagation losses despite using a strongly absorbing material.

## **The Role of Planar Waveguides in Sensing Applications**

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The only non-vanishing components in the guided TM mode are  $E_x$ ,  $H_y$ , and  $E_z$ . Due to their high sensitivity, imperviousness to electromagnetic interference, short detection time, compactness, low



## **RH-Waveguide Platform**

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The typical propagation loss of ~5-10 dB/m in a planar silica waveguide is nearly five orders-of-magnitude larger than that in low loss optical fibers. This wide gap in loss performance has

## **Low losses Er<sup>3+</sup>-doped flexible planar waveguide: Toward an all-glass**

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One fundamental brick to obtain this features extension is the fabrication of low loss inorganic active planar waveguides on flexible glass substrate. Here, we present the preliminary

## **Low loss, high contrast planar optical waveguides based**

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Abstract A new class of integrated optical waveguide structures ("TriPleX") is presented, based on low cost CMOS-compatible LPCVD processing

## **Ultra-low-loss Ta<sub>2</sub>O<sub>5</sub>-core/SiO<sub>2</sub>-clad planar waveguides on Si**

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In this article, we report the demonstration of a record low propagation loss of 3.1 dB/m across the entire telecommunications C-band for a CMOS-compatible Ta<sub>2</sub>O<sub>5</sub>-core SiO<sub>2</sub>-clad planar

## **Ultra-low loss SOI waveguide crossings designed by a hybrid global**

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Due to the small footprint, ultra-low insertion loss, and easy fabrication step of the proposed designs, we believe such waveguide crossings can have great application potential in



## Design and characterization of arrayed waveguide

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Planar waveguides with ultra-low propagation loss are necessary for integrating optoelectronic systems that require long optical time delay or

### 250C Process for

**In this work, we present the first demonstration of ultra-low losses of 2.0dB/m in silicon nitride waveguides and ring resonators with  $Q = 11.18$  million, using a anneal-free process involving ICP**



## **High Extinction, Broadband, and Low Loss Planar Waveguide Polarizers**

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**Abstract: A technique for making high extinction and broadband polarizers in a low loss planar waveguide platform is presented and characterized. Extinction greater than 78 dB is obtained with**

**NTT Technical Review, July 2005, Vol. 3, No. 7**

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**Abstract New waveguide fabrication techniques will be needed to make highly functional next-generation planar lightwave circuits (PLCs). After first reviewing the basic PLC fabrication process,**



**this article**

## **Ultra-Low Loss Si<sub>3</sub>N<sub>4</sub> Planar Waveguide Platform and Applications**

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**The ultra low-loss Si<sub>3</sub>N<sub>4</sub> /Oxide on silicon waveguide platform has yielded a wide range of passive and active components that open up new PIC applications. Delay lines, 3D stacking, gratings, filters,**



## **Additive manufacturing of planar waveguides for**

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**This work supplies a novel pathway for the design and fabrication of a low-frequency THz PC waveguide with potential applications in communication,**

### **Planar waveguide , Description, Example & Application**

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**The waveguide's physical parameters, such as the core and cladding thickness, refractive index, and waveguide width, must be carefully controlled during the fabrication process.**



## **Optical Waveguides: A Detailed Look at Their Design**

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**Explore the fundamentals of optical waveguides and their pivotal role in modern photonics. Learn about different types of waveguides, such as planar, fiber optic,**

**Low-loss optical waveguides made with a high-loss material**

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**egrated waveguides that consist of pairs of integrated high-index-contrast gratings. To showcase this concept, we demonstrate guiding of visible light in the wavelength range of 550-650**

**Ultra-low-loss Ta<sub>2</sub>O<sub>5</sub>-core/SiO<sub>2</sub>-clad planar waveguides on Si**

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**Ultra-low-loss Si<sub>3</sub>N<sub>4</sub>-core SiO<sub>2</sub>-clad planar waveguides / (ULLWs) on silicon provide the basis of an integration platform allowing for a broad variety of exceptional active and passive**



## **Introduction to the Special Issue on Ultralow Loss Planar Waveguides**

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**Abstract: The fifteen papers in this special issue focus on ultra low loss planar waveguides and the applications.**

## **Optical Planar Waveguide Sensor with Integrated**

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**Optical planar waveguide sensors, able to detect and process information from the environment in a fast, cost-effective, and remote fashion, are**



## **The Hidden Power of Waveguide Low Pass Filter: Revealing Their**

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**Understanding Waveguide Low Pass Filters:  
Fundamentals and Design Principles** One way that  
these filters work is by using the special way that  
waves travel through waveguide

**Low loss, high contrast planar optical waveguides  
based on low-cost**

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# **Low loss, high contrast planar optical waveguides based on low-cost CMOS compatible LPCVD processing**

## **Fabrication of Sub-micro Silicon Waveguide with**

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**Keywords: silicon waveguide; vertical-sidewall; smooth sidewalls; low-loss; oxidation; 1. Introduction Fabrication of silicon waveguides and other silicon photonic structures with significantly**



## **Fabrication of buried waveguides in planar silica films using a direct**

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**Abstract** A CW CO<sub>2</sub> laser ablation technique is used to form buried waveguides in planar silica films. It is shown that the refractive index of a silica thin film is reduced sufficiently adjacent to

## **A Comparison of Approaches for Ultra-Low-Loss Waveguides**

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**Abstract:** We compare ultra-low-loss silica waveguides with PECVD SiO<sub>2</sub>, borophosphosilicate glass (BPSG), and wafer-bonded thermal oxide upper claddings. We demonstrate fiber-like (0.045 dB/m)



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