

## Comsol Optical Waveguide Simulation

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In this archived webinar, learn how to use the beam envelope method in COMSOL Multiphysics ® to solve nonlinear optics problems. We go over the benefits of this method and advanced examples. Learn more about the specialized features for waveguide simulation in the Wave Optics Module here.

~~Simulating Optical Waveguides with COMSOL Multiphysics~~ @ Technical Papers and Presentations. Quick Search

~~Simulation of Nonlinear Optical Absorption in Silicon ...~~

Wave optics simulation brings new opportunities for the design and optimization of optical systems. Watch this archived webinar on the basics of modeling and simulating wave optics for application areas

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such as directional couplers, nonlinear optical waveguides, optically large systems, and metamaterials.

## ~~Simulating Wave Optics in COMSOL Multiphysics®~~

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Modelling and simulation of a ridge waveguide and a Mach - Zehnder interferometer was done. An optical ridge waveguide is made; width was chosen as 3 microns for 1550 nm wavelength electromagnetic wave. Substrate material chosen was Sapphire, over which 300 nm LiNbO<sub>3</sub> was chosen as the waveguide material. The geometry is done in 3D model.

## ~~Waveguides and Interferometers - COMSOL Multiphysics~~

In this work COMSOL Multiphysics was applied to the full 3D electromagnetic wave simulation of a novel forked grating coupler designed to interface with vortex modes of 1550 nm wavelength light. Full 3D models were solved for the radiating vector mode from a forked grating emitter structure driven from a nanophotonic waveguide.

## ~~Simulation of Vector Mode Grating Coupler ... - COMSOL~~

In this introductory wave optics modeling example, we demonstrate how to model a small lossy scatterer in the proximity of an optical waveguide in COMSOL®. × Warning Your internet explorer is in compatibility mode and may not be displaying the website correctly.

## ~~Modeling a Scatterer Near an Optical Waveguide | COMSOL Blog~~

The Wave Optics Module, an add-on to the COMSOL Multiphysics® platform software, is an efficient choice for your optical modeling needs. The Wave Optics Module includes a specialized beam envelope method that can be used to simulate optically large devices with far fewer computational resources than traditional methods.

## ~~Wave Optics Software for Analyzing Micro- and ... - COMSOL~~

This guide describes the Wave Optics Module, an optional add-on package for COMSOL Multiphysics® designed to assist you to set up and solve electromagnetic wave problems at optical frequencies. This chapter introduces you to the capabilities of this module.

## ~~Wave Optics Module - COMSOL Multiphysics~~

COMSOL is a powerful multi-physics simulation tool. It is used for a wide range of fields, including electromagnetics, semiconductors, thermodynamics and mechanics. In this P&S we will focus on the rapidly growing field of integrated photonics.

## ~~P&S: COMSOL Design Tool for Photonic Devices~~

In addition to simulation of optical forces, it will be shown how the transmitted amplitude and phase of the light in the waveguide is influenced by the trapping of a particle. Some experimental results will be included.

## ~~Optical Trapping on Waveguides - COMSOL~~

the COMSOL Multiphysics® software, which basically involves dividing the simulation domain into smaller subdomains forming a mesh. In this study, the standard meshing tool was used with the mesh setting at physics-controlled mesh and element size set to “extremely fine”. A total of 25020 triangular elements

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## ~~Modelling Of Optical Waveguide Using COMSOL Multiphysics~~

We will present an overview of the Wave Optics Module, an add-on to COMSOL Multiphysics ®. This module solves the Maxwell equations to simulate an optical wave's propagations, reflections, refractions, absorptions, scatterings, diffractions, and all other optical phenomena in spaces that are comparable to the wavelength.

## ~~COMSOL Day: Microwave & Optics~~

Once you have made the simulation in the COMSOL (the one you are talking about, I assume you made a 2D simulation with air and silicon oxide as cladding materials), you can find out the effective...

## ~~How can I calculate an effective refractive index by using ...~~

Both 2D and 3D simulation results will help in visualize the electromagnetic field propagating inside the waveguides and devices. Readers without fundamental handle on optics modeling are suggested to read the Optics Modeling and Visualization with COMSOL Multiphysics: A step by step graphical instruction manuscripts for detailed discussion.

## ~~Amazon.com: Optical Waveguides & Devices Modeling and ...~~

Stimulated Brillouin Scattering (SBS) arises from the interaction of propagating acoustic and optical fields. In many materials including silicon, Brillouin scattering is the strongest optical nonlinearity. 1,2  
1. R. Y. Chiao, C. H. Townes, and B. P. Stoicheff, " Stimulated Brillouin scattering and coherent generation of intense hypersonic waves," Phys. Rev. Lett. 12, 592 (1964).

## ~~Guided acoustic and optical waves in silicon-on-insulator ...~~

Electromagnetics in COMSOL Multiphysics (RF) is intended for people who wish to analyze electromagnetic wave phenomena using COMSOL Multiphysics. It is expected that attendees will have an existing knowledge of the structure of COMSOL Multiphysics and will possess a relevant engineering, physics, mathematics or science background.

## ~~Electromagnetics in COMSOL Multiphysics: RF and Wave Optics~~

Based on the waveguide structural parameters and refractive indices of the waveguide materials ( $n_{\text{SU-8}} = 1.57$ ,  $n_{\text{SF-11}} = 1.525$ ,  $n_{\text{SiO}_2} = 1.45$ ), optical mode analysis using COMSOL multiphysics has been performed. The optical waveguide with 6 $\mu$ m width is estimated as a highly multi-mode waveguide with at least eight guiding optical modes.

## ~~Polymer waveguide grating sensor integrated with a thin ...~~

Selective tuning of high-Q siliconphotonic crystal nanocavities via laser-assisted local oxidation  
Charlton J. Chen,<sup>1,3,?</sup> Jiangjun Zheng,<sup>1,3</sup> Tingyi Gu,<sup>1</sup> James F. McMillan,<sup>1</sup> Mingbin Yu,<sup>2</sup> Guo-Qiang Lo,<sup>2</sup> Dim-Lee Kwong,<sup>2</sup> and Chee Wei Wong<sup>1,?</sup> <sup>1</sup>Optical Nanostructures Laboratory, Columbia University, New York 10027, USA <sup>2</sup>The Institute of Microelectronics, 11 Science Park Road,

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