

## **Optical waveguide modeling: techniques and comparison**

### Abstract

In this chapter, a single mode rib optical waveguide is modeled using three distinct methods which include the finite difference method (FD), effective index method (EI) and two dimensional beam propagation method (2D-BPM). Starting from the fundamental equations of Maxwell's, the functionalities of the said methods in solving the wave equation are discussed. Using a standard rib optical waveguide structure, comparisons between the methods are made in terms of normalized propagation constant values and the obtained results are shown to have a good agreement. The obtained result will be useful in the future process of actual waveguide modelling.