

DESIGN OF SILICON WIRES BASED DIRECTIONAL COUPLERS FOR MICRORING RESONATORS

Author: *Le Trung Thanh, Nguyen Canh Minh, Nguyen Van Khoi,
Bui Thi Thuy, Nguyen Thi Hong Loan*

*Vietnam National University, Hanoi (VNU); thanh.le@vnu.edu.vn
University of Transport and Communications, Hanoi, Vietnam
Hanoi University of Natural Resources and Environment, Hanoi, Vietnam*

Abstract:

In this paper, we investigate the design of directional couplers and microring resonators based on silicon wires. The aim is to design the directional coupler for high performance microring resonators. The effect of microring radius, gap, silicon waveguide width on power transmission ratios is analyzed by using the 3D Eigenmode Method (EME). The behavior of microring resonators using the investigated directional coupler such as finesse (F), Q-factor and free spectral range (FSR) is investigated. The effect of the waveguide width variation on the finesse, Q-factor is also studied. The FDTD simulation shows a very good agreement with the proposed design approach.

*Key words: Integrated optics; Coupled resonators; Integrated optics devices; Silic
guidewaves; EME simulation method.*