

## **Fabrication of Multimode Interference Devices Based on Ge-doped Silica-on-silicon Waveguides by HC-PECVD and RIE**

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Multimode interference devices based on Ge-doped silica-on-silicon waveguides are fabricated by HC-PECVD and RIE. The thin film deposition and etching process are optimized to achieve good optical devices. Silica layer particle control is studied for the thin film deposition. It is found that the preheating time is related to silica layer particle distribution. Using photoresist as masks for RIE simplifies the process. The waveguide shape profile is optimized by different RIE parameters. The optimal process balances the waveguide shape, surface smoothness, and etching rate. Good performance multimode interference devices have been realized.