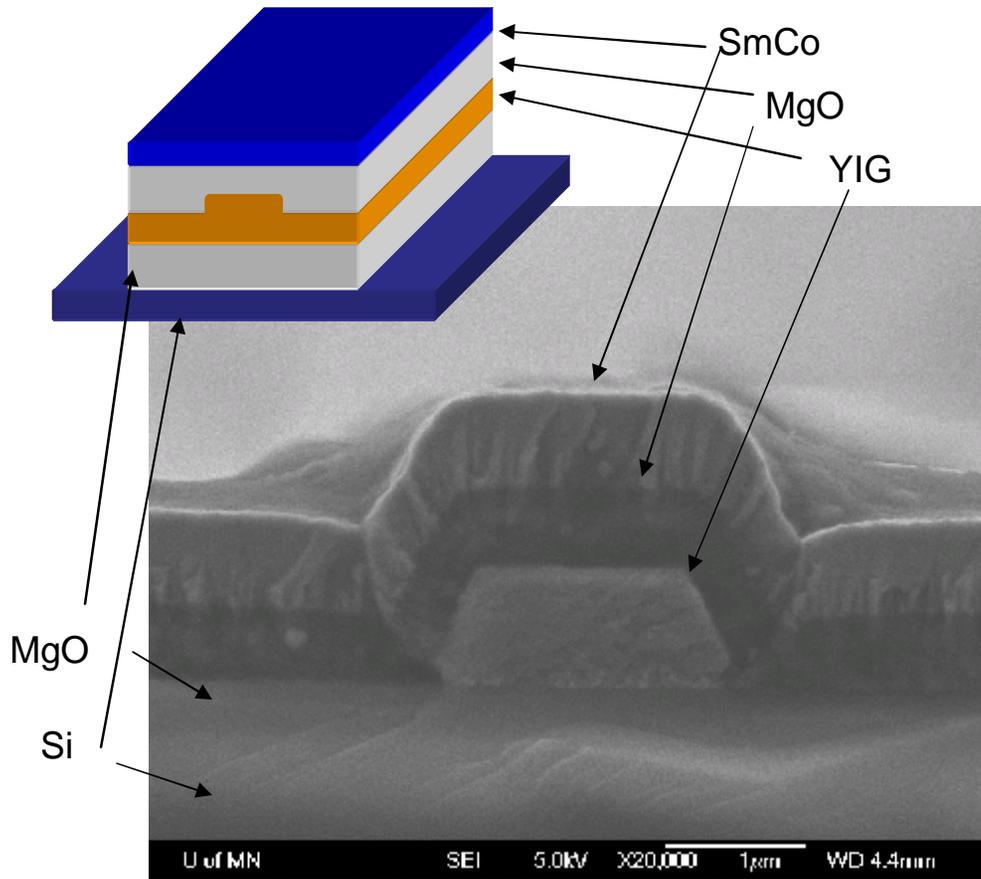


# Fully Integrated Optical Isolators

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Schematic and side view of integrated ridge waveguide optical isolator.

- Magneto-optical waveguides ( $\text{Y}_3\text{Fe}_5\text{O}_{12}$ ) with smooth edges have been successfully grown on semiconductor substrates without thermal cracking.
- This is the first demonstration of integrated YIG waveguides with excellent optical properties on semiconductors.
- Birefringence, which inhibits Faraday rotation was substantially reduced by varying the waveguide's cross-sectional shape and dimensions.
- A SmCo thin film permanent magnetic was deposited on top of yttrium-iron-garnet (YIG)/ MgO optical cladding layer to bias on magneto-optical layer.

A photonic crystal polarizer completes integration of Isolators

