

Microring resonators as building blocks for VLSI photonics

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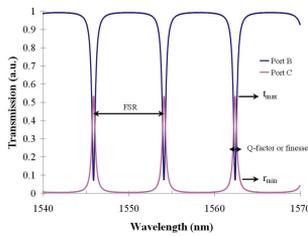
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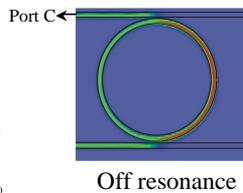
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Microring resonators?

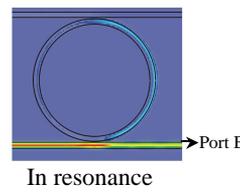
- * Novel opto-electronic component: versatile, compact and scalable
- * Basic function: wavelength-selective filter
- * Basic building block for filters, routers, add-drop multiplexers, logic gates, ...



Theoretical response

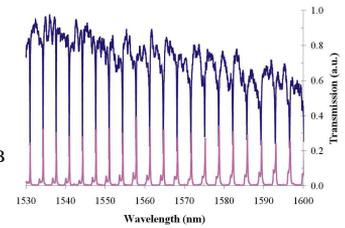


Off resonance



In resonance

Layout and simulation

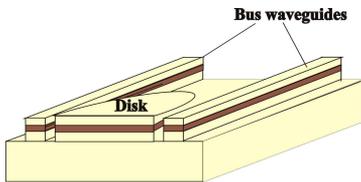


Experimental response

Fabrication

Two possible routes

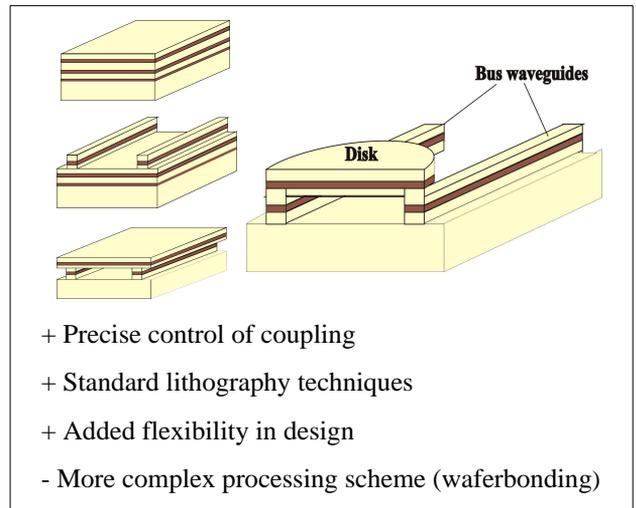
Horizontal integration



- + Simple processing scheme
- Difficult control of coupling
- Expensive lithography techniques required

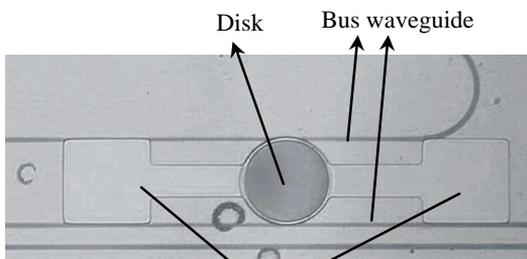
Preferred and developed processing scheme

Vertical integration



- + Precise control of coupling
- + Standard lithography techniques
- + Added flexibility in design
- More complex processing scheme (waferbonding)

Thermo-optic tuning



Resistors for thermo-optic tuning

