

ULTRA HIGH QUALITY TUNABLE ADD-DROP FILTER BASED ON ACTIVE WHISPERING GALLERY MODE RESONATORS

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Whispering Gallery Mode (WGM) Resonators have been shown to have unique properties holding great promise for use in optical communication systems. Recent innovations from Dr. Lan Yang's Nano-Photonics lab at Washington University in St Louis bring the promise much closer to reality. In particular, the recent fabrication of an active WGM resonator operating in the 1550nm range has achieved significant advances in add/drop multiplex function, including:

1. Add and drop efficiency exceeding 80%
2. Crosstalk of <2%
3. Extremely narrow linewidth (50MHz)

With these advances it becomes feasible to consider a wavelength division multiplexing (WDM) system based upon very narrow channels. Indeed, thousands of wavelength channels may fit in the spectrum typically allocated for a single Dense Wavelength Division Multiplexing (DWDM) channel (100GHz). When coupled with known thermal tuning and silicon fabrication techniques these fundamental devices hold great promise to deliver a small, integrated, cost effective Reconfigurable Optical Add Drop Multiplexer (ROADM).