Micromechanical Phase-Shifting Gate
Optical Modulator

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a micromechanical optical modulator that uses a phase-shifting gate instead of micromirrors.

OVERVIEW

Micromechanical optical modulators are called optical switches and are an essential component of communication networks. There are many different types of switches, one of which uses a micromachine to move a micromirror into and out of the optical path. Unfortunately, these types of switches are prone to alignment difficulties that impact their proper operation.

THE INVENTION

UW–Madison researchers have developed a phase shifting gate (PSG) that, instead of using micromirrors, exploits interference effects to create a highly reflective surface. This device eliminates the alignment problems present in the micromirror system.

APPLICATIONS

• Optical communication systems including on/off switches, routing switches and switched modulators
• Sensors such as accelerometers

KEY BENEFITS

• Low production cost - the micromechanical optical modulator may be constructed by standard microelectromechanical system batch fabrication techniques on conventional planar substrates
• High reliability
• Switch can be actuated rapidly to provide pulsed on and off switching of the beam.
• Various materials are suitable for the gate, including crystalline silicon.
• No additional surface finishing or coating steps are required, which simplifies the gate
fabrication process (these steps are typically required for the production of conventional micromirrors).

ADDITIONAL INFORMATION

Tech Fields
Information Technology - Telecommunications
Analytical Instrumentation - Optics
Semiconductors & Integrated Circuits - Switches

CONTACT INFORMATION

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846.