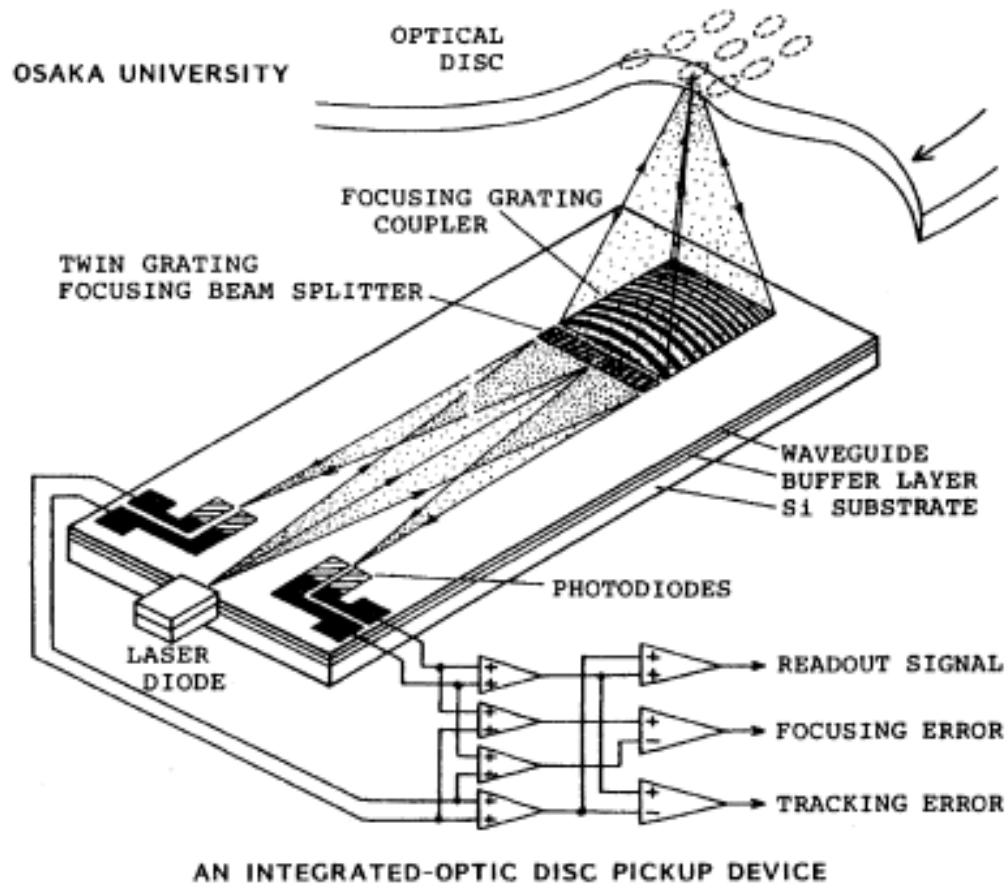


# Applications of Optical Integrated Circuits

## *An IO Optical Disk Readhead*



the optical readheads used in commercially available audio compact disk (CD) players often have eight or nine discrete optical elements, all of which have to be held in exact alignment in the face of much shock and vibration.

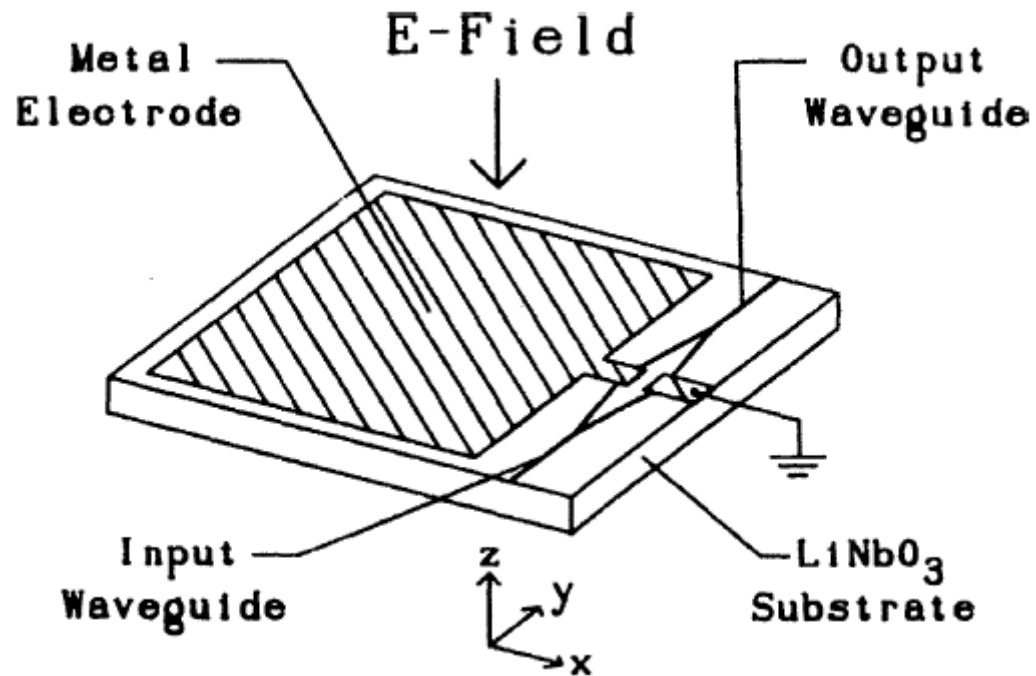
# Applications of Optical Integrated Circuits

## *An IO Optical Disk Readhead*

The OIC readhead of Fig., which has dimensions of only 5 x12 mm, obviously has the advantage of being relatively insensitive to shock and vibration, as compared to a readhead fabricated from discrete optical components. While this OIC was first proposed as an optical disk pickup device, the same basic arrangement can be used more generally as a fully integrated interferometer position/displacement sensor with direction discrimination. Such an interferometric sensor would be useful in a variety of high-precision positioning applications in which submicrometer accuracy is required.

# Applications of Optical Integrated Circuits

## *IO High Voltage Sensor*



# Applications of Optical Integrated Circuits

MEMs – MOEMs

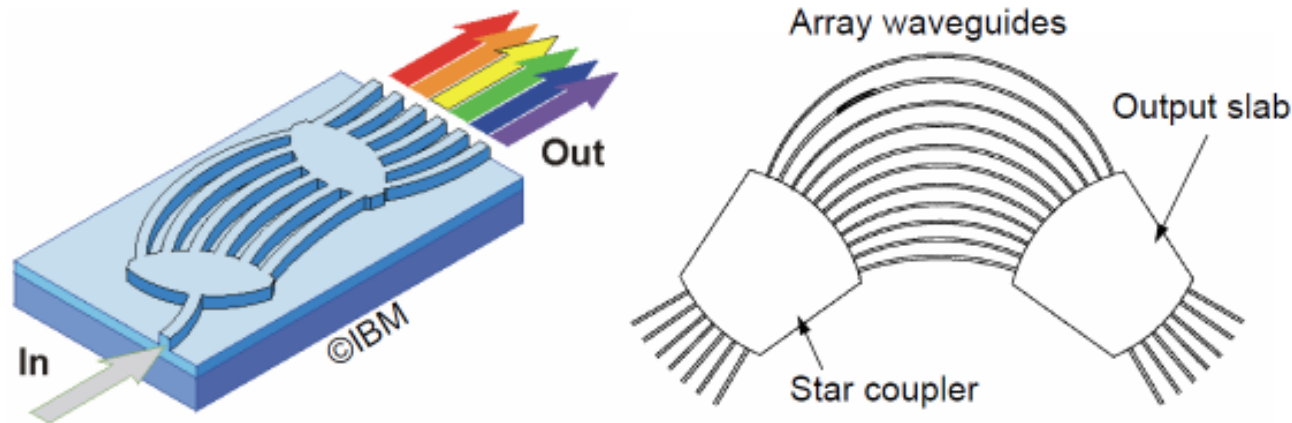
Table 19.1 Micro-opto-electro-mechanical systems

Sensors	Actuators	Optical elements
Length	Tuner	Microlens
Pressure	Switch	Coupler
Vibration	Scanner	Filter
Light	Interferometer	Micromirror
Voltage	Voltage Generator	Beam Splitter
Temperature	Micromotor	HOE (grating)

A sensor enables one to detect or measure some property, an actuator has moving parts, and an optical element performs its function without moving parts.

# Applications of Optical Integrated Circuits

## Array waveguide gratings



Array waveguide gratings (AWGs) are useful components for WDM networks (WDM = Wavelength Division Multiplexing).

- AWGs can cope with channel spacing of 0.1nm with less than 30dB crosstalk
- AWGs can support a large number of channels
- AWGs are large (~cm)