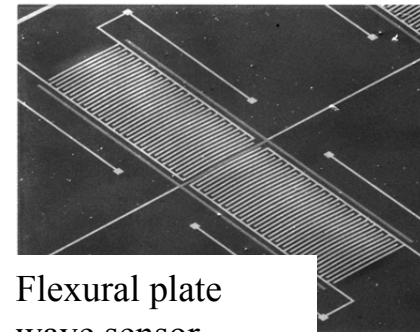
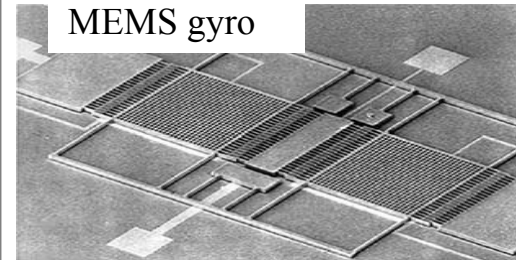


Goals and Potential Impact if Successful

- Design and construct high performance, low power, high acceleration MEMS inertial sensors.
 - Enables military, automotive, and medical applications
- Develop prosthesis to assist balance impaired
 - 40% of US population is effected by dizziness
 - Effects elderly in particular
- Achieve selectivity in chem/bio sensors
 - Enables applications in medical and homeland defense



Approach and/or Accomplishments

- Developed first and best performing MEMS silicon gyro, which is in commercial production
- Teamed with MEEI to successfully develop control algorithms and demonstrated single axis balance prostheses
- Achieve selectivity in chem/bio sensors with arrays of flexural plate wave, adhesive stress, and microcalorimeters
- Developed code for analysis and design of microthermophotovoltaics (enhanced radiation at small gaps)

Bottlenecks and Open Research Questions

- Improved gyro and accelerometer performance at high acceleration and shock levels
- Reduced size and power of MEMS sensors.
- Discrimination in chemical sensor arrays
- Demonstration of balance prosthesis over large angles in any direction while standing, walking, and climbing stairs
- Additional applications for MEMS Sensors

