

Hydrogen Detection Methods

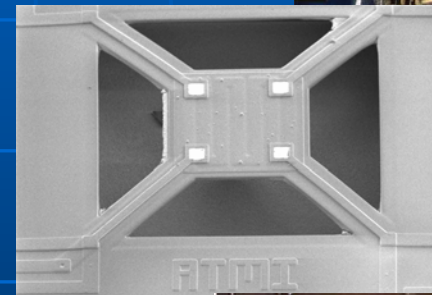
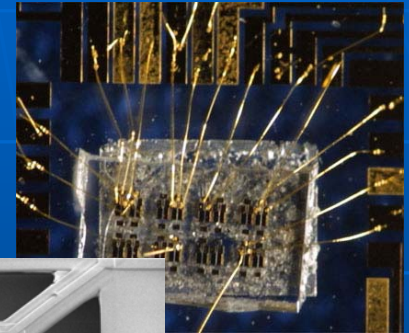
Detection

■ Sensors

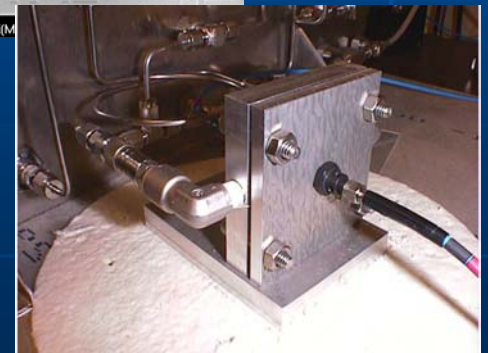
- Safe, reliable, cheap sensors being developed
- Placement is important

■ Odorants

- Diffusion/dispersion matching is difficult
- Poison to fuel cell?



ATMI-22 0.8kV 36.7mm x400 SE(M)



Safety/Leak Detection

- Natural gas industry uses odorants for leak detection
 - Odorants require a nose present
 - Mercaptan poisons fuel cells
- Performance-based requirement
 - Methods to achieve detection not specified

Odorants

■ Pros

- Well understood
- Public is Used to Odorants
- ...

■ Cons

- Requires a Human Nose Near the Leak
- Must track with the gas
- Molecule Size and buoyancy an issue
- Poisons Fuel Cell Membranes
- ...

Sensors

■ Pros

- Higher sensitivity
- Strategic placement possible
- Quantifiable measurements
- Can be coupled with alarm or shutdown
- ...

■ Cons

- Less familiar to the public
- Could give impression that hydrogen is less safe than other fuels because new technology is being used
- ...

Safety Perception Issues

- What issues, real or perceived, must be considered in order to implement hydrogen detection methods that provide public assurance of safety?
- Brainstorming session