# SEMIPERMEABLE MEMBRANES FOR MICROMACHINED SILICON SURFACES

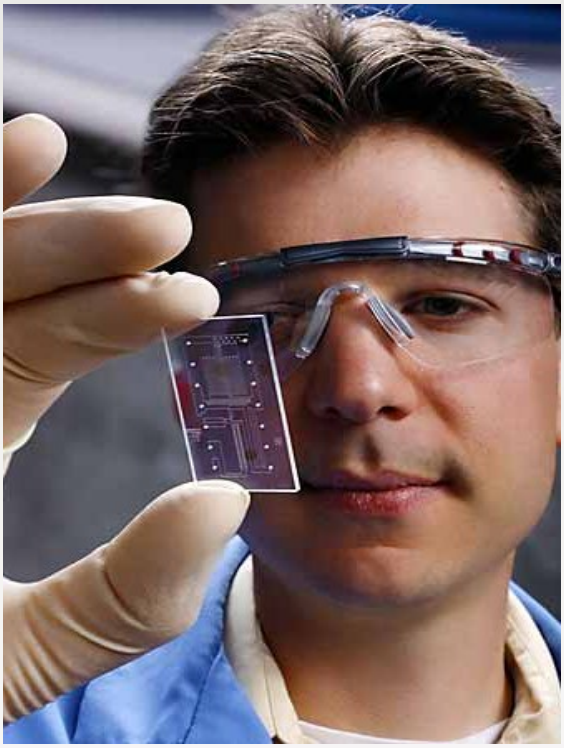
**TECHNOLOGY READINESS LEVEL: 5**

KEY ELEMENTS HAVE BEEN DEMONSTRATED IN RELEVANT ENVIRONMENTS

**US PATENT # 6,660,648**

## TECHNOLOGY SUMMARY

Sandia National Laboratories has developed semipermeable silicon nitride membranes using an etch process to be co-manufactured on a micromachined silicon surface. There is a need for a co-fabricated filtration system for enhancement of reliability and functionality in micro fluidic devices. Common polymer-based and metal based membranes are often incompatible with micromachining methods and requirements for packaging and chemical compatibility. The ability to utilize the benefits of a semi-permeable membrane without a secondary manufactured component increases functionality and integration of micro fluidic devices and lab-on-chip applications.



## POTENTIAL APPLICATIONS

- Lab-on-a-Chip
- Micro Fluidics (gas and liquid)
- Sample Filtration
- Fuel Cells

## TECHNOLOGICAL BENEFITS

- Monolithic integration of filters for Lab-on-a-Chip products
- Eases cost and complexity of manufacturing
- Robust
- Permeability control at time of manufacture
- Compatible with a wide range of silicon

## TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

**ip@sandia.gov**

Refer to SD # 6474

or visit

**https://ip.sandia.gov**

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