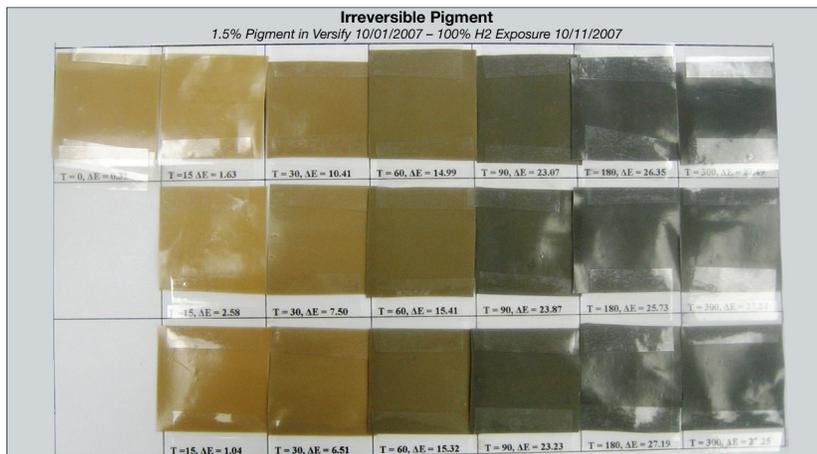
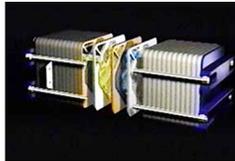
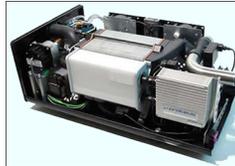




# John F. Kennedy Space Center's Chemochromic Detector for Sensing Hydrogen Gas Leakage



The National Aeronautics and Space Administration (NASA) seeks partners interested in the commercial application of the Chemochromic Detector for Sensing Hydrogen Gas Leakage. This detector is useful in any application where it is important to know not only the presence but also the location of a hydrogen gas leak. The technology utilizes a chemochromic pigment and polymer that can be molded or spun into a rigid or pliable shape usable in variable temperature environments including atmospheres of inert gas, hydrogen gas, or mixtures of gases. A change in color of the detector material indicates where gaseous hydrogen leaks are occurring.

## BENEFITS

- Excellent temperature stability (-75° C to +100°C)
- Can be used in cryogenic applications
- Easy to apply and remove
- Requires no power to operate
- Quick response time
- Leak points can be detected visually or electronically
- Nonhazardous
- Detector can be reversible or irreversible
- Does not require continual on-site monitoring
- Long shelf life
- Very durable
- Inexpensive to manufacture

technology ■ opportunity

## APPLICATIONS

- Fuel Cells
- Storage Tanks
- Connectors
- Fuel Reformers
- Connection Hardware
- Grounding Connections
- Hoses / Pipes
- Hydrogen Powered Vehicles
- Hydrogen Dispensing Stations

## TECHNOLOGY STATUS

- Patent pending
- U.S. patent
- Copyrighted
- Available to license
- Available for no-cost transfer
- Seeking industry partner for further codevelopment

## Technology Details

The detector utilizes a combination of chemochromic pigment and polymer that can be extrusion molded, injection molded, or fiber spun into desired rigid or flexible shapes or designs. Upon exposure to hydrogen gas, the detector pigment quickly turns from a light to a dark color at the point of exposure. This color change can be reversible or irreversible, depending on the needs of the application. Additional additives can be incorporated with the pigment and polymer to enhance the performance of the detector in harsh outdoor or low temperature environments or when the detector must be free of static charge. When incorporated into a composite structure, the detector may be monitored using instrumentation that reports a change in color via a digital output.

This detector overcomes many shortcomings of other gas detectors. It requires no special training to use, has no power requirements, is simple to install and remove, and can be monitored from a remote location during hazardous operations. It will also operate in locations where other detectors cannot, such as inert gas or variable temperature environments.

## Partnership Opportunities

NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive. If your company is interested in the Chemochromic Detector for Sensing Hydrogen Gas Leakage technology, or if you desire additional information, please reference Case Number KSC-13088 and contact:

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