

Elastomeric Hydrogen-Resistant Biopolymer

Hydrogen Storage and Transport Solution

CLAIM:

Materials that can contain hydrogen are scarce. This technology is a very promising new biopolymer that exhibits the properties of hydrogen storage and containment, without degradation.

CHALLENGE:

Hydrogen transportation and storage is currently challenging and costly. Hydrogen is known to erode stainless steel and other metals during the storage process. Erosion from hydrogen will lead to complete destruction of a hydrogen pipeline within 15 years. This results in the loss of hydrogen gas, and continuing reinvestment in the hydrogen storage infrastructure.

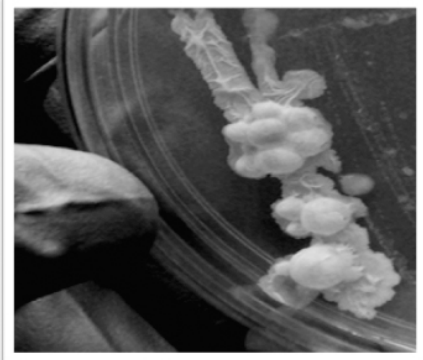
SOLUTION:

NMSU polymer coating will:

- Protect the stainless steel pipelines from hydrogen erosion (embrittlement).
- Eliminate both maintenance and replacement costs for pipelines and hydrogen transportation companies.

MARKET:

According to the U.S. Departments of Transportation and Energy, there are currently only 700 miles of hydrogen pipelines, despite this being the most cost-effective method for hydrogen transport. Improved protection of these pipelines will allow for increased manufacturing of pipelines.



Product Comparison	Maintenance Cost	Durability
Stainless Steel (s.s.) with No Coating	High	Low
s.s.+ NMSU Polymer Coating	Low	High
s.s. with Fiberglass Coating	Mid	Mid
s.s.+ Teflon Coating	Mid	Mid
Fluorinated Ethylene Propylene	High	Mid
Carbon-Fiber-Reinforced Polymers	High	Mid



INVENTOR(S) EXPERTISE

Dr. Geoffrey Battle Smith

Professor, Biology
New Mexico State University

Dr. David C. Johnson

WERC
New Mexico State University

Dr. Nirmal Khandan

Ed & Harold Foreman Endowed Chair, Civil Engineering
New Mexico State University

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For more information please contact:
Terry Lombard at 575.646.2791 or
tlombard@nmsu.edu

