## Energetic Organic Materials for Solid Gas-generating Fire Extinguishing Systems (Ramot)

**code:** 3-2013-469

Michael Gozin, T.A.U Tel Aviv University, Exact Sciences, School of Chemistry

### Technology

Fire suppression gas generators systems are designed to fill the protected compartment with inert gas, leaving behind after discharge practically no residues. These systems are widely used to protect billions of dollars-worth of assets worldwide providing superior protection for trains, airplanes and marine vessels, as well as for computer rooms, telecommunications facilities, museums and facilities operating emergency power generators, where exposure to water, foam or dry powder can result in more damage to the protected assets than from the fire itself.

The new solid-state nitrogen gas-generating Organic Polymer, represents the next generation of non-toxic and environmentally friendly nitrogen-rich materials, for integration into clean fire-extinguishing systems.  It releases clean N2 gas. The solution is Safe, Fast, 100% environmentally-friendly discharging and is compact and space efficient.

### The Need

Gas generators may use pressurized gas, liquid or solid propellants to extinguish fire by oxygen depletion. The key advantage of solid-propellant gas generators is storage efficiency, resulting in smaller & lighter systems.

Since 1960, Halon-based fire-suppressants dominated the market. Its high Ozone depletion potential caused production cessation & ban for use by 2017. This led to significant research for alternative clean agents, such as HFCs and inert gases. HFCs carry moderate environmental impact, while inert gases lack storage efficiency. Other solutions such as Sodium Azide (NaN3) carry a toxic hazard.

The Clean Fire-extinguishing Systems market requires safe, non-toxic (for manufacturing and use), environmentally-friendly materials that would not require high-pressure storage and distribution piping.

### Potential Application

Gas propellants applications include fire suppression systems and automotive airbags.

The Global fire-suppression systems market is estimated at $2.2B, of which the gas generators segment values $720M including sales to the Oil & Gas, Telecom & IT, Museums & records storage, Medical facilities, Aircraft, Marine and Military sectors.

Gas generators are also used for automotive airbags with estimated sales of $900M in 2012.

### Patents

Granted patent

### Contact for more information:

Noam Greenspoon ✉,

Ramot at Tel Aviv University Ltd. P.O. Box 39296, Tel Aviv 61392 ISRAEL
Phone: +972-3-6406608
Fax: +972-3-6406675