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## **DUNMORE Multi-Layer Insulation Film Protects Four MMS Mission Spacecraft**

*Multi-Layer Insulation (MLI) films supplied by DUNMORE Corporation for NASA's Magnetospheric Multiscale (MMS) mission are now in space providing thermal protection to MMS' instruments and components.*

**Bristol, PA, March 13, 2015** – Following the recent successful launch of NASA's Magnetospheric Multiscale mission, DUNMORE Corporation's insulating products are now protecting MMS' four identical spacecraft as they settle into orbit to study a poorly understood phenomenon known as magnetic reconnection. DUNMORE supplied the film-based multi-layer insulation materials (<http://www.dunmore.com/industries/aerospace.html>) that are now in use thermally protecting electronic instruments and other components on all four MMS spacecraft.

The Magnetospheric Multiscale mission, known as MMS, was launched from Cape Canaveral, Florida atop an Atlas V-421 launch vehicle on March 12, 2015. Its four spacecraft are now flying in formation in an elliptical orbit around Earth to study how magnetic fields connect and disconnect, explosively releasing energy that can accelerate particles to nearly the speed of light - a process known as magnetic reconnection.

The first phase of the mission, lasting about one year, studies magnetic reconnection sites on the sun side of Earth's orbit. Those sites are small. The MMS will fly through them in less than one second. However, the MMS sensors work at computer speeds and will capture the movement of particles as well as magnetic and electrical fields in real time as they interact. The second phase of the mission studies sites on the night side of Earth.

The mission gives scientists, for the first time, a view of the magnetic reconnection phenomenon as it is happening. The MMS technology focuses on small-scale processes to reveal how magnetic fields interact and cause what is popularly known as "space weather"; the aurora borealis is one example. Ultimately, the mission will lead to a better understanding of how this fundamental process works on the sun, on other stars and throughout the universe. It will also shed light on giant geomagnetic storms such as the "Halloween storms" that affect communications, aircraft safety and even the electrical power grid.

DUNMORE, now in its 45th year, is an ISO certified manufacturer of coated, laminated and metalized films (<http://www.dunmore.com/products/metalized-films.html>) with two manufacturing locations in the United States and one in Europe. As a key sub-contractor on the MMS mission, DUNMORE provided film-based insulating materials to protect mission components and delicate electronics.

The films are sewn together, cut into complex shapes and sealed with matching polyimide tapes

(<http://www.dunmore.com/products/polyimide-tape.html>). The resulting Thermal Protection System (TPS) then covers every instrument and component of the spacecraft structure. Since 1984, these manufactured materials have provided thermal protection against average temperature ranges of -150°C to +150°C as well as shield against micrometeoroids and space debris and the corrosive effects of atomic oxygen.



Image Credit: NASA/Chris Gunn

**About DUNMORE**

DUNMORE Corporation is a global supplier of engineered coated and laminated films and foils. DUNMORE offers film conversion services such as coating, metalizing and laminating along with contract film manufacturing. DUNMORE produces coated film, metallized film and laminating film substrates for the photovoltaic, graphic arts, packaging, aerospace, insulation, surfacing and fashion industries. DUNMORE is privately held, ISO 9001:2008 and OSHA VPP Star certified. For complete information on DUNMORE's products, services and industries served, please visit DUNMORE's website <http://www.dunmore.com/>.

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