

Lightweight Inflatable Solar Array: Providing a flexible, efficient solution to space power systems for small spacecraft

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Affordable and convenient access to electrical power is critical to consumers, spacecraft, military and other applications alike. In the aerospace industry, an increased emphasis on small satellite flights and a move toward CubeSat and NanoSat technologies, the need for systems that could package into a small stowage volume while still being able to power robust space missions has become more critical. As a result, the Marshall Space Flight Center's Advanced Concepts Office identified a need for more efficient, affordable, and smaller space power systems to trade in performing design and feasibility studies.

The Lightweight Inflatable Solar Array (LISA), a concept designed, prototyped, and tested at the NASA Marshall Space Flight Center (MSFC) in Huntsville, Alabama provides an affordable, lightweight, scalable, and easily manufactured approach for power generation in space or on Earth. This flexible technology has many wide-ranging applications from serving small satellites to soldiers in the field. By using very thin, ultra-flexible solar arrays adhered to an inflatable structure, a large area (and thus large amount of power) can be folded and packaged into a relatively small volume (shown in artist rendering in Figure 1 below). The proposed presentation will provide an overview of the progress to date on the LISA project as well as a look at its potential, with continued development, to revolutionize small spacecraft and portable terrestrial power systems.

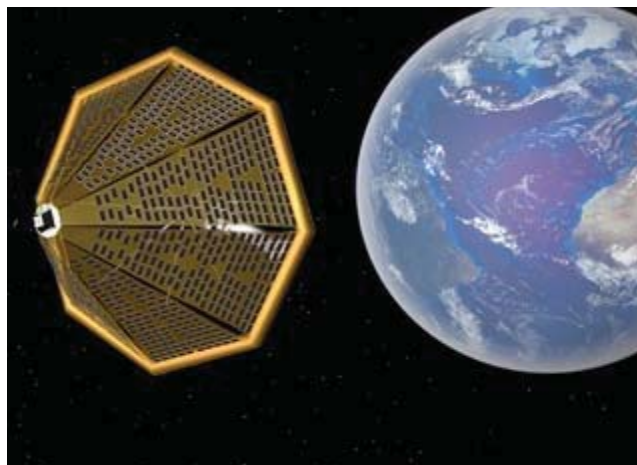


Figure 1. Artist rendering of Lightweight Inflatable Solar Array