

## NanoWorld Journal - Space Section, with Emphasis on SWaP

Thakoor Anilkumar

*Jet Propulsion Laboratory, NASA, USA*

**Correspondence to:**

Dr. Anilkumar P. Thakoor  
Supervisor, Bio-Inspired technologies and  
Systems Group, Jet Propulsion Laboratory  
California Institute of Technology, Pasadena  
CA 91109, USA

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The high cost of escaping Earth's gravity is the dominant factor that continues to limit large scale exploration and exploitation of space. With continuous technology advances, the cost of space launch is gradually decreasing, however, it is still several thousand dollars per kilogram. Lowering the cost of access to space therefore remains a major policy objective for space agencies all over the globe. A large fraction of the weight of a rocket is fuel and expendable rocket stages. Recent introduction of the reusable rocket stages is a major step in reducing the launch cost. Work is also underway to develop alternatives such as ground-based, beamed energy propulsion, which would revolutionize space launch systems.

Significant reduction in Size, Weight, and Power (SWaP) of spacecraft sub-systems while enhancing their performance levels remains a major focus of research and development in aerospace technology communities, clearly seen for example, as a common theme throughout the comprehensive 10-year Technology Roadmaps (<http://www.nasa.gov/offices/oct/home/roadmaps/index.html>) published by NASA in 2015.

In general, advances in nanotechnology are expected to have a broad impact on space missions specifically through engineered materials and structures for spacecraft, on-board power generation, power distribution, as well as energy storage; and sensors, actuators, electronics, and space instruments; in improving their performance, damage tolerance, safety, environmental durability and longevity; while reducing their overall mass, power consumption, and size.

The NanoWorld journal provides a multidisciplinary, broad forum for publication of original research results, advanced technology development, as well as "out-of-the-box" concepts for dramatic reduction in SWaP aimed at aerospace systems.

**Thakoor Anilkumar**

Jet Propulsion Laboratory, NASA

Associate Editor – NanoWorld Journal