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CARBON NANOTUBES BASED THERMAL DISTRIBUTION AND TRANSFER BUS SYSTEM FOR
1U CUBESATS

Abstract

On the road of the development of our first satellite, the NEE-01 PEGASUS, we encountered the need of developing a heat dissipation and transfer system to components that will need such heat in order to avoid freezing while the satellite was in the eclipse part of its orbit.

Many materials and many designs were tested in order to achieve the best thermal transfer rates as indicated by the specifications derived from extensive testing and from the manufacturing specifications of our target components until we achieved the best results using multi walled carbon nanotube sheets to manufacture a thermal transfer bus that met our needs.

Such thermal transfer system will allow the spacecraft to route the internally generated heat, as well as any heat coming from outside that our MLI allows to penetrate the external hull to be efficiently sink to our four battery arrays which we are using as thermal dissipation masses