

## **Nanomaterial Based Sensors for NASA Missions**

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Nanomaterials such as carbon nanotubes (CNTs), carbon nanofibers (CNFs), graphene and metal nanowires have shown interesting electronic properties and therefore have been pursued for a variety of space applications requiring ultrasensitive and light-weight sensor and electronic devices. We have been pursuing development of chemical and biosensors using carbon nanotubes and carbon nanofibers for the last several years and this talk will present the benefits of nanomaterials these applications. More recently, printing approaches to manufacturing these devices have been explored as a strategy that is compatible to a microgravity environment. Nanomaterials are either grown in house or purchased and processed as electrical inks. Chemical modification or coatings are added to the nanomaterials to tailor the nanomaterial to the exact application. The development of printed chemical sensors and biosensors will be discussed for applications ranging from crew life support to exploration missions.