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## The role of advanced materials in the future of Space Exploration

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Advanced materials play a critical role in shaping the future of space exploration, offering solutions to challenges like extreme temperatures, high radiation, and limited resources. Innovations in materials science, including lightweight composites, radiation-resistant polymers, and self-healing materials, enhance the safety, durability, and efficiency of spacecraft and habitats. These materials enable longer missions, more resilient structures, and greater sustainability in deep-space environments. As space exploration pushes further into unknown territories, the development and deployment of advanced materials will be key to supporting human presence and scientific discovery beyond Earth's orbit.

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