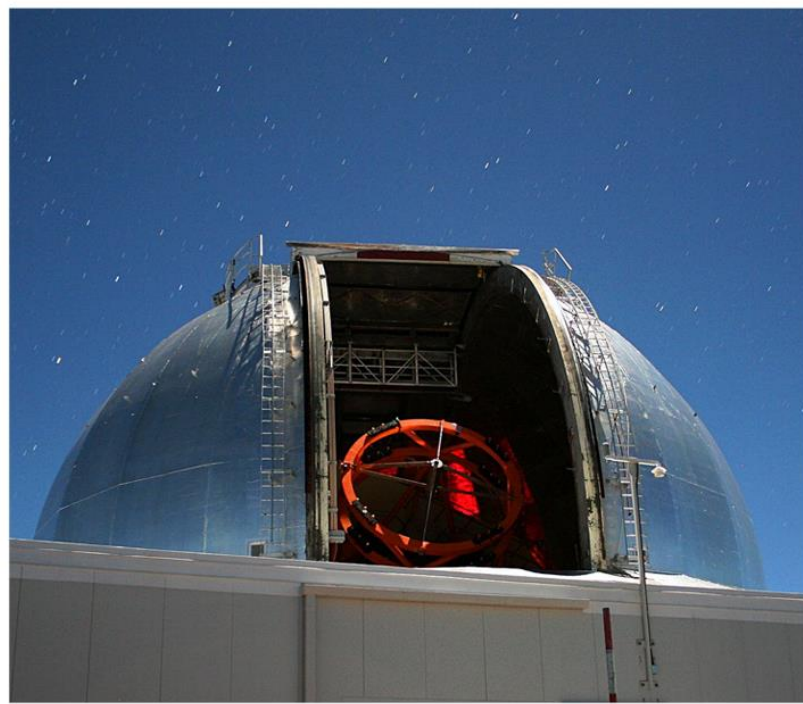
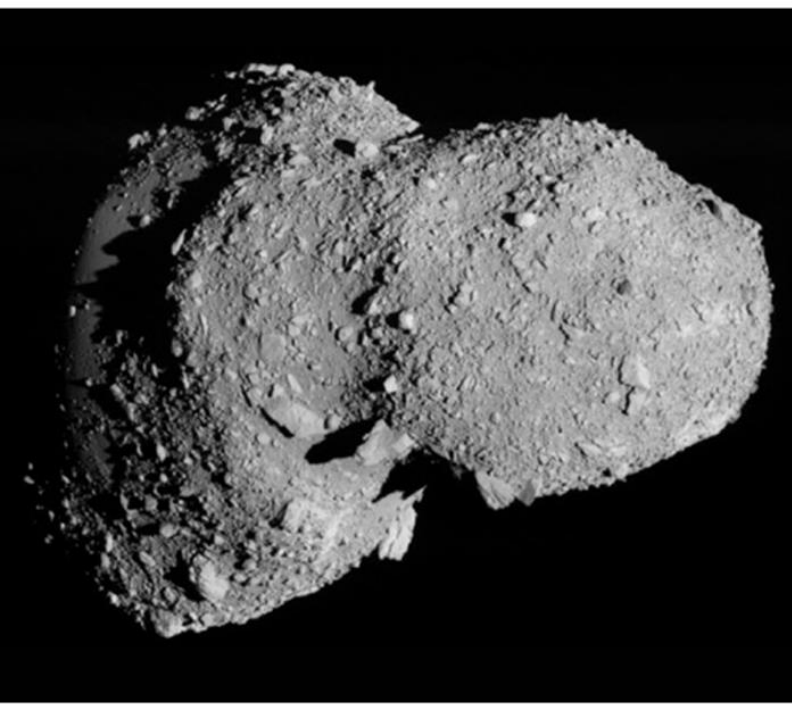


Asteroid Redirect Mission Solar Electric Propulsion

Michael J. Gazarik, Ph.D.

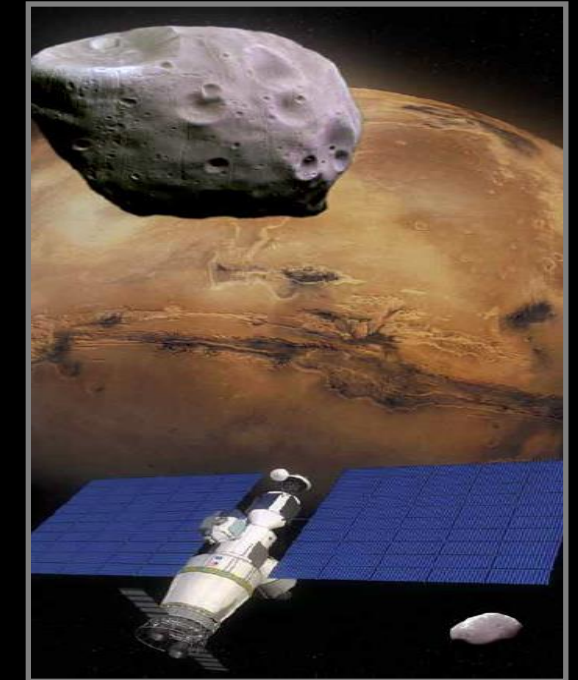
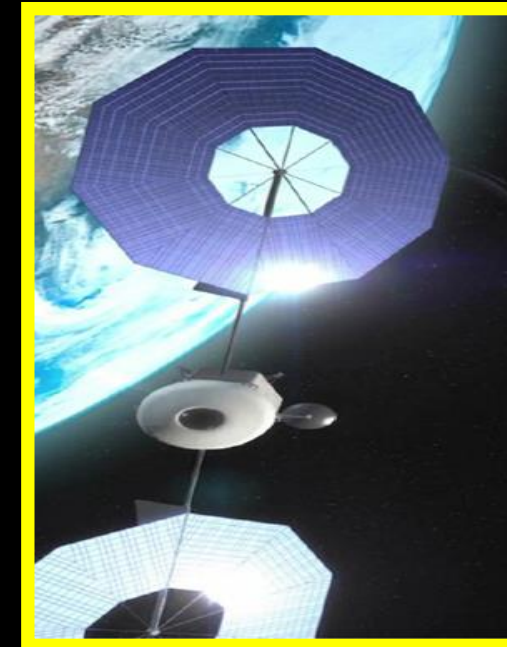
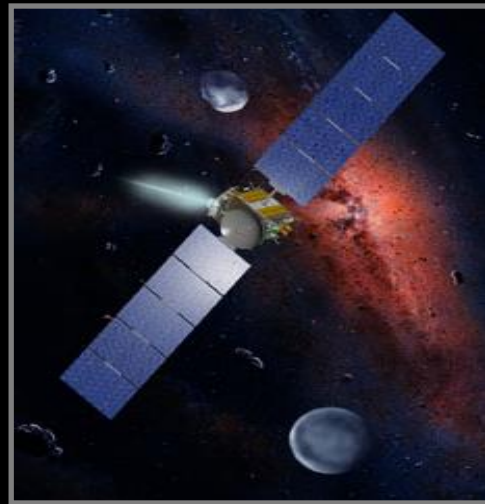
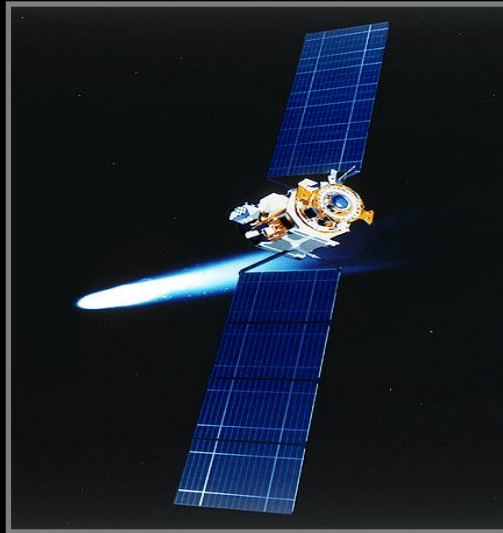
NASA Associate Administrator for Space Technology



Challenges in Space Exploration

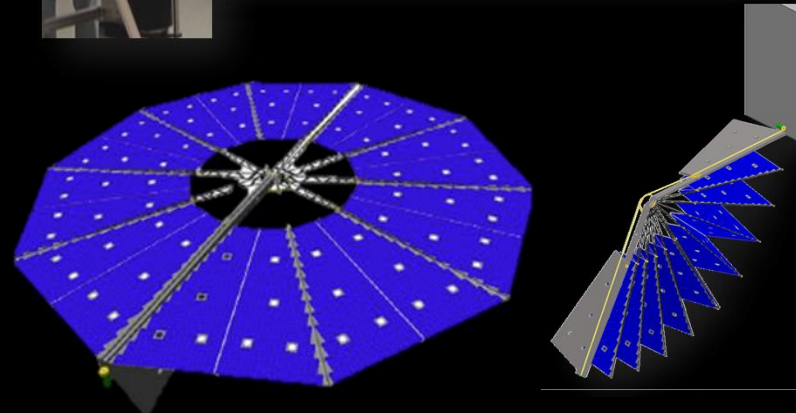
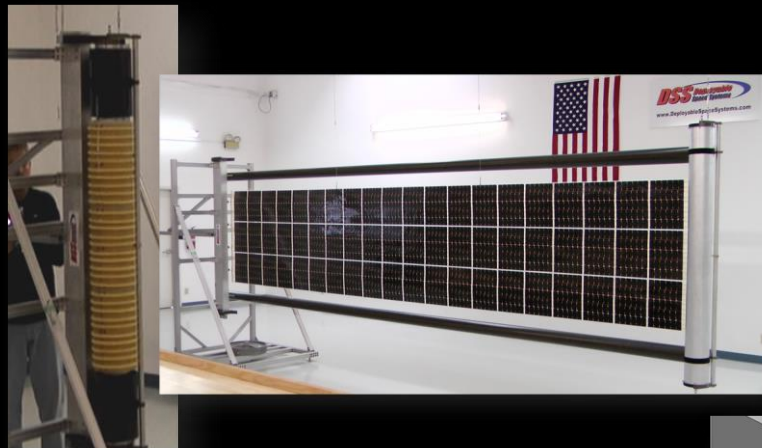


Advancing Solar Electric Propulsion Technology

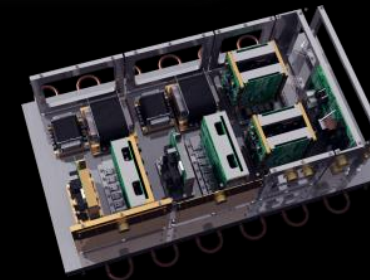
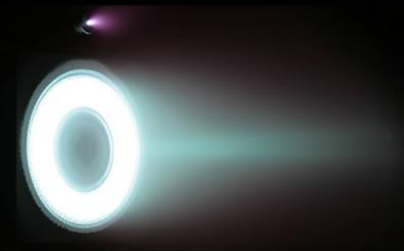


Deep Space 1 1998	Dawn 2007	AEHF Recovery 2010	Asteroid Redirect Mission	Far-term Exploration Missions circa 2030's
Technology Demonstrator	Deep-Space Science Mission	Satellite orbit established with Hall Thrusters	Robotic Mission to Redirect Asteroid to Trans-Lunar Orbit	Crewed mission beyond Earth space
2.5 kW power system 2kW EP system	10 kW power system 2.5kW EP system	~16kW-class power ~4.5kW-class EP	50kW-class power system 10 kW-class EP	350kW-class power system 300kW-class EP

High-Powered Solar Electric Propulsion



Solar Arrays



Thruster and Power Processing Unit (PPU)



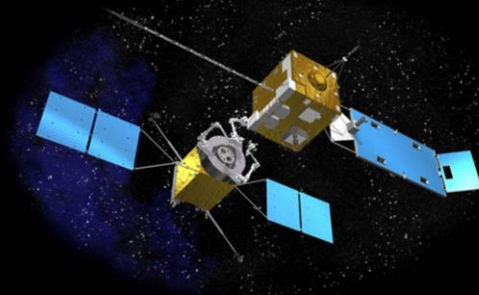
Propellant Feed System and Storage Tanks

High-Powered SEP Enables Multiple Applications

Human
Exploration



Satellite Servicing



Future
Missions
To Mars



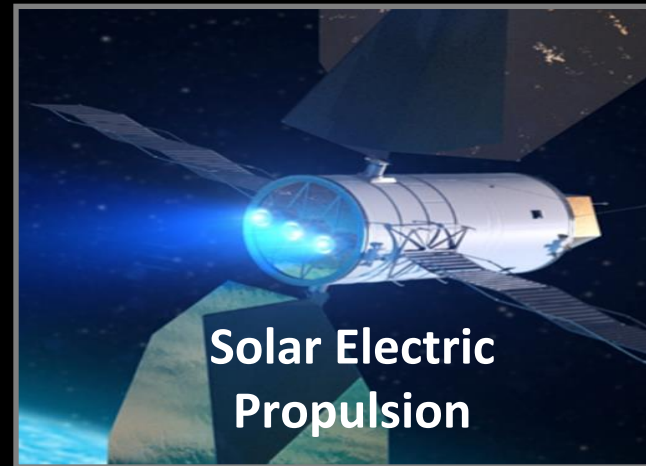
Payload Delivery



Space
Situational
Awareness



Solar Electric
Propulsion



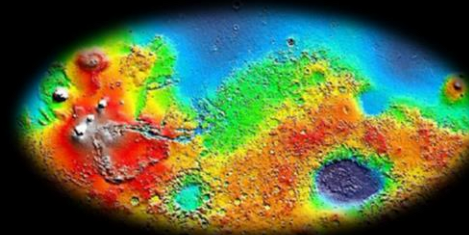
ISS Utilization



Orbital Debris
Removal



Space Environments
Mapping



Robotic Science
Missions

