

13th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Space Elevator Tether and Space Mineral Resources (3)

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ASTEROID MINING USING A SOLAR POWERED ROVER

Abstract

The looming dearth of the earthy materials has surged up as an imperative issue demanding an urgent relief. The Near-Earth Asteroids (NEA) have been discovered to be an indispensable aid to this dispute of society. Since asteroids are composed of volatiles, minerals, hydrocarbons and their isotopes, which can be subjugated with the employment of present technology, hard rock drilling mechanism, these assist to be one of the most impeccable solution being approachable and economically feasible. This paper discusses about the mining of NEA, briefing about the technical and scientific methods employed to reach and mine an asteroid and also mandates about the approach involved to deliver the extracted materials back to earth using a solar powered mining rover. Asteroids being micro-gravity planetoids raise a high degree of intricacy in extracting them. Targeting mineral rich NEA a solar powered mining rover, which has been made to adhere to the surface of asteroid by burrowing anti-rotational screws, would mine the asteroid to dig out the minerals and would accumulate them in matrix chambers, made of high thermal and radiation resistant lightweight materials possessing high strength. Mechanical approach has been gabbbed about in order to drill the asteroid and excavate the resources and hence forth a push mechanism has been briefed that would allow it to transport the materials back onto earth. The extraction of such affluent minerals which are metals such as iron (Fe), nickel (Ni), silicon (Si), silver (Au), platinum (Pt) and many more and as well elite gases such as carbon monoxide (CO), oxygen (O₂), nitrogen (N₂) and many more from NEAs would help the society to reestablish the mineral that will be on brink of extinction.