

ABSTRACT  
(1 page only)

TITLE OF THE PAPER:

MATERIALS SCIENCE RESEARCH OPPORTUNITIES ON SPACE STA "ION FREEDOM"

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DESCRIPTION: (should clearly present the purpose of your paper and include detailed information on the methods and results of your research)

Space Station 1 'reedom (SSI') will provide an unprecedented opportunity for materials science research. The microgravity environment onboard SSI' will allow both cooperation among nations as they share research facilities and healthy competition as Japanese, European, Canadian, and American researchers race side by side to synthesize new materials and improve technology.

The Space Station Program is striving to enhance opportunities for both traditional long range materials science research programs and SIIOR (response commercial or academic research endeavors. Scientists striving to understand and control the physical processes governing crystal growth can take advantage of the continuous, 30 year operation of the Space Station 10 refine their experimental methods, investigate new materials, and concentrate on reproducibility of their results. They can accomplish these things without wasting the time and resources needed 10 refly the facilities they employ. This type of scientific research benefits from the Space Station long range strategic planning which guarantees continued access to resources. 11 owever, commercial and academic researchers will need rapid access to space. Companies expect to see rapid returns on their investments of scarce research and development money. Commercial researchers may be interested in investigating the behavior of a material or process or in setting bench marks for ground based material production and will need quick access to space or they will lose their edge in the marketplace. NASA is developing new, streamlined integration procedures which will permit users who can meet a standard set of interfaces to be manifested and flown in a relatively short time. Universities also need relatively quick access to space to enable graduate students to carry out their research in a reasonable amount of time.

NASA's responsiveness to the needs of varying types of research will enable materials science research to be conducted on SSI' which will not only increase our fundamental understanding of physical processes and materials. It will also lead to improvements in our day to day life on earth as technology incorporates the knowledge gained on Space Station.