

# T<sub>C</sub>SUH Special Seminar

Texas Center for Superconductivity at the University of Houston

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## Technology Needs for Future Human Space Missions

**Wednesday, November 7, 2007**

Room 102, University of Houston Science Center

12:00 noon – 1:00 p.m.

11:45 a.m. Sandwich Lunch

### Abstract

A discussion of the need for technology development for the human exploration and development of space will be presented. Human exploration and development of space is aimed at opening the space frontier by exploring, using, and enabling the development of space and expanding the human experience into the far reaches of space. This includes increasing human knowledge of nature's processes using the space environment, exploring and settling the solar system, achieving routine space travel, and enriching life on Earth through people living and working in space. NASA's Mars Pathfinder and the International Space Station provide extensive experience, research and technology (R&T), and infrastructure for other envisioned programs in support of human exploration and development of space.

In the past decade, the Clementine and the Lunar Prospector missions have provided valuable remotely sensed data of the Moon. In addition, NASA has studied the development of a lunar habitat and human mission to Mars as possible missions. These missions face common challenges of travel to these planets and for survival of humans on the surface of planets. With the human Mars mission being the first to such a distant planet, advanced technologies will be required to enable the mission and to provide cost effective and safer approaches.

The R&T areas considered important for a human mission to Mars include advanced human support, renewable resources and utilization of planetary resources, space transportation, automation and robotics, space power, information processing and communications systems, sensors, and instruments. NASA is actively providing the technology developed for the space applications to industry, universities, and other organizations for research, education and commercialization purposes. Strategies for this technology transfer will also be presented.

**RSVP by Tuesday, November 6, 2007 to 713/743-8210**

*Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.*

Dr. Kumar Krishen is the ST/Senior Scientist/Lead Technologist and R&D Lead for the Technology Transfer Office, NASA Johnson Space Center (JSC), Houston, Texas, responsible for developing strategies for joint research and technology projects and plans with industries, universities, other NASA centers and government agencies. Dr. Krishen has served at Virginia Tech as University Fellow for Technology Transfer, Office of Special Initiatives, and Visiting Professor on a special NASA assignment. He also served as Adjunct Professor at Rice University.

Dr. Krishen has served as JSC Chief Technologist and represented JSC as the Principal Technologist on the NASA Council on Science and Technology. His academic degrees are from Kansas State University (Ph.D. and M.S.), Calcutta University (M. Tech and B. Tech), and Jammu and Kashmir University (B.A.) in electronics, electrical engineering, radio physics, physics, and mathematics. Dr. Krishen taught and guided research at Kansas State University before joining Lockheed in 1969 as Staff Scientist. Dr. Krishen joined NASA in 1976 and has held key positions in Advanced Programs in Earth Observations, Science Payloads, Experiment Systems, Tracking & Communications, Mission Support, New Initiatives, and technology research and development.

Dr. Krishen was nominated by Governor George W. Bush and confirmed by the State Senate of Texas to the Texas Board of Licensure for Professional Medical Physicists in 1999 and continues to serve on this Board under Governor Perry's administration. Authoring more than 160 technical papers/reports/proceedings, Dr. Krishen is a Fellow of the Society for Design and Process Science (SDPS) and an Assoc. Fellow of American Institute of Aeronautics and Astronautics (AIAA). He is the recipient of many awards, medals, and commendations from universities, industry, and government organizations, and is listed in Who is Who in the World, Who is Who in America, Who is Who in Science and Technology, Men of Achievement, Personalities of America, and 2000 Outstanding People of the 20th Century and was commissioned "Honorary Texan" by Texas Governor Perry in 2001. Dr. Krishen was awarded Bharat Samman, the highest honor given by the Non Resident Indian (NRI) Institute in 2006. The award was presented by the British High Commissioner to India.



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