

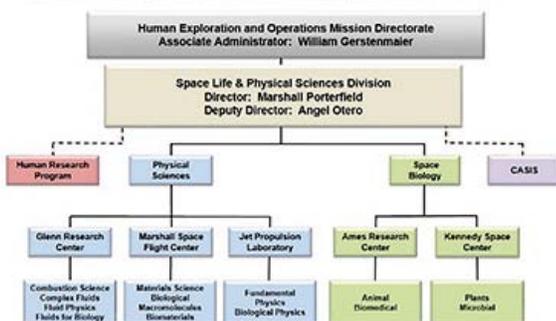


Biophysics Research Support at NASA/MSFC

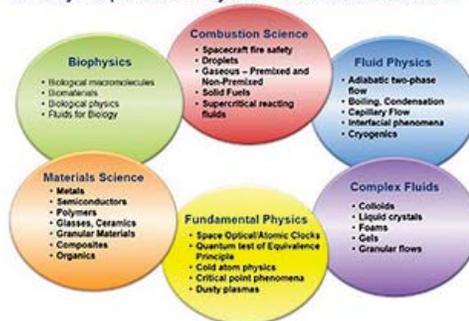
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Introduction: Biophysics is a developing program out of NASA’s Space Life and Physical Sciences Division. The program consists of four areas: Biological Macromolecules, Biomaterials, Biological Physics, and Fluids for Biology. Marshall Space Flight Center (MSFC) is responsible for technical support for Biological Macromolecules and Biomaterials. MSFC has played a key role in Biological Crystal Growth in Microgravity since its inception over 30 years ago. A new area presently being evaluated for inclusion in the Biophysics Program at MSFC, is Biomaterials. A workshop focused solely on Biomaterials will be held within the Materials Research Society Fall Meeting, November 30 – December 5, 2014. Three areas of Biomaterials are envisioned: Biological Materials (materials of biological origin), Biomaterials (materials aiding in tissue or organ regeneration), and Biomimetics (bio-inspired materials).

Space Life & Physical Sciences Division - Organizational Structure



Gravity-Dependent Physical Sciences Research



MSFC Ground-Based Research Facilities



Protein expression, purification and analysis



Crystal growth and analysis

Flight Crystals



(a)

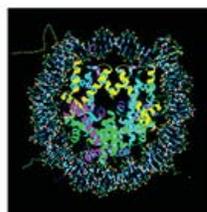


(b)

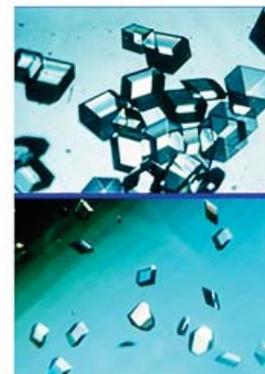
MnSOD crystals grown in PCAM crystallization chamber



Nucleosome Core Particle Flight Crystal



Nucleosome Core Particle (NCP) Structure



Recombinant Human Insulin Grown in PCF (UAB/Hauptman-Woodward)