



NASA SBIR 2011 Phase I Solicitation

X3.01 Enabling Technologies for Biological Life Support

Lead Center: KSC

Participating Center(s): ARC, JSC, MSFC

Biochemical Systems for CO₂ Removal and Processing to Useful Products

NASA is interested in biochemical or biological systems and supporting hardware suitable for purifying the atmosphere in confined spaces such as crewed spacecraft or space habitat cabins. Of special interest is the removal and fixation of CO₂ from a cabin atmosphere via biochemical pathways or autotrophic organisms (plants, algae, cyanobacteria, etc) to produce oxygen and other useful products, including food. Processes considering photosynthesis must address how quantum and/or radiation use efficiency will be improved. Systems should consider minimizing power, mass, consumables and biologically produced waste, while maximizing reliability and efficiency.

Biochemical Systems for Wastewater Treatment

NASA is interested in biological or biochemical approaches to assist in purifying and recycling wastewater in confined spaces such as crewed spacecraft or space habitat cabins. Of special interest are novel approaches for removing carbon, nitrogen and phosphorus to potable or near potable concentrations, and reduction of biosolids. Systems should consider operating with low power, low consumables, low volume, high reliability and rapid deployment, as well as addressing multi-phase flow issues for reduced gravity.