

The Energetics Futures Brief

Dennis M. Bushnell
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When: Tuesday, December 2nd, at 2:00pm

Where: Mechanical Engineering (MEC), Room 2-3

This presentation will focus on the advanced and futuristic technologies already at the laboratory stages or on the horizon that have the potential to shape how we will live and conduct our activities. The urgency for humanity to change energy consumption, and the types of energy that is used will form part of this presentation leading to a discussion on the following topics:

- Nano-plastics for the conversion of solar energy into electricity
- Thermo-electrics (i.e., the direct conversion of temperature differences), tidal-current turbines and geothermal sources for electricity production
- Production of food biomass and biofuels by means of genetically modified halophytes (salt tolerant plants) and algae growing in saline or brackish waters
- Robotics replacing higher-level human labour, machine intelligence and human life extension
- Carbon dioxide (CO₂) to carbon monoxide (CO) conversion and hydrogen production by artificial photosynthesis
- Photo-catalytic electrolysis of water for hydrogen production
- Low-radiation nuclear fusion, such as proton – Boron 11 aneutronic fusion
- Low energy nuclear reactions

Bio



As Chief Scientist at NASA Langley Research Center, Dennis M. Bushnell is responsible for Technical Oversight and Advanced Program formulation, with technical emphasis on areas of atmospheric sciences and structures, materials, acoustics, flight electronics/control/software, aerothermodynamics, spacecraft, and space access. Mr Bushnell is also responsible for the development of advanced programs and technologies for sustainable energy and food production that are expected to become viable within 10 to 25 years.

He has authored more than 230 publications and major presentations, and delivered nearly 200 invited lectures and seminars often on the future of technology and the shape it will take for humans and society.