Bio-Suit System

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December 5th, 2007
ELE 282 – Professor Ying Sun

In today's world scientists are challenged on a daily basis to answer philosophical questions that have plagued the human race for ages; questions such as who are we, where does life come from, and are we alone. As we strive toward a better understanding of our world and universe, advances in technology help widen our base. One such technology is the Bio-Suit.

Extra-vehicular activity (EVA) is defined as any activity that an astronaut performs outside of the spacecraft, whether it is in microgravity or an extraterrestrial surface such as the Moon or Mars. In order for a human to continue function outside of our own atmosphere a type of an Extra-vehicular mobility unit (EMU) is required. This EMU is also currently known as a spacesuit.

Currently, EMU's work well solely in conditions with minimal atmospheres. Spacesuits would be unwieldy for use on extraterrestrial surfaces due to their large mass, volume and complexity. Being based on a gas-filled pressure suit concept, current spacesuits also considerably restrict the astronaut's range of motion compared to an unsuited human - particularly disadvantageous for extraterrestrial surface traversal where climbing, squatting and other such motions must be regularly performed.

Researchers at MIT have come up with a new idea for the spacesuit; the Bio-Suit. This concept is based on a 'second skin' capability where electrically actuated artificial muscle fibers could be used to enhance strength and stamina. This amazing new technology incorporates new breakthroughs in wearable technologies, information systems and evolutionary space systems design; and biomedical breakthroughs in skin replacement and materials.

The Bio-Suit System would provide life support through mechanical counter-pressure where pressure is applied to the entire body through a tight-fitting suit with a helmet for the head. Wearable technologies will be embedded in the Bio-Suit layers and the outer layer might be recyclable. Hence, images of 'spraying on' the inner layer of the Bio-Suit System emerge, which offers design advantages for extreme, dusty, planetary environments.

Although the Bio-Suit System is estimated to be available in 2016, this technology will no doubt pave the road for countless space explorations to come.

Sources:

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