Wearable Health Monitoring Systems

For use in extreme environments and conventional health care settings

The shrinking size and weight of electronic circuitry has given rise to a new generation of smart clothing that enables biological data to be measured and transmitted. As the variation in the number and type of deployable devices and sensors increases, technology must allow their seamless integration so they can be electrically powered, operated, and recharged over a digital pathway.

Nyx Illuminated Clothing Company has developed a lightweight health monitoring system that integrates medical sensors, electrodes, electrical connections, circuits, and a power supply into a single wearable assembly. The system is comfortable, bendable in three dimensions, durable, waterproof, and washable. The innovation will allow astronaut health monitoring in a variety of real-time scenarios, with data stored in digital memory for later use in a medical database. Potential commercial uses are numerous, as the technology enables medical personnel to noninvasively monitor patient vital signs in a multitude of health care settings and applications.

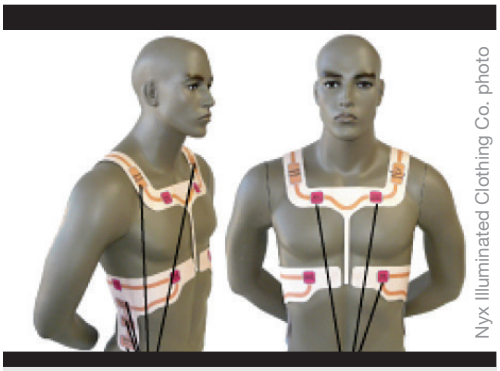
Applications

NASA

- Astronaut health monitoring:
  - Flight preparation and takeoff
  - Travel and landing
  - General mission activities
  - Health assessment in instances where astronauts cannot verbally communicate
  - Research for future missions

Commercial

- Medical researchers can noninvasively monitor daily vital signs of one of more patients participating in medical trials.
- Physicians can monitor patient health status during normal lifetime pursuits or after surgical procedures.
- Patients can set alarm triggers to warn of excessive risk activities.



Nyx Illuminated Clothing Co. photo

Phase II Objectives

- Build a working prototype that will demonstrate:
  - Integration of medical sensors, electrodes, electrical connections, circuits, and power supply into a single, wearable assembly
  - Distribution of electrical circuits to reduce bulk
  - Easy replacement of electrodes
  - Ability to measure biological sensor data and transmit it to an external computing device
  - Simplicity of adding medical sensors to the system through use of a digital data bus to reduce overall wiring needs
- Perform reliability testing and integrate electrocardiogram (EKG) functionality
- Introduce a specification to allow for snap-fit of new biosensors

Benefits

- Provides continuous and noninvasive health monitoring in extreme environments
- Integrates medical sensors and electronic circuitry into a single wearable assembly

Firm Contact

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