Skysong Innovations
Advancing the Arizona State University Knowledge Enterprise

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Printed Actuators

Actuators find utility in a wide variety of applications, including self-deploying devices, relays, switches, etc. In particular, robust, low-power microactuators, with no moving parts, find ready application in fields such as robotics, artificial muscles, micro UAVs, etc., and the market continues to grow. While current microactuators already have many promising features and abilities, a simpler, more automatable assembly could make these multipurpose devices even more versatile.

Researchers at Arizona State University have developed novel thermally activated carbon nanotube (CNT) actuators that can move, walk, open, close or rotate upon application of thermal energy. The in-situ, self assembling microactuators are lightweight, inexpensive to produce and enable rapid prototyping. Moreover, they are extremely robust, being able to withstand millions of actuation cycles.

These robust, lightweight, inexpensive, easy to produce actuators provide exciting expansion opportunities to an already rapidly growing microactuator market.

Potential Applications

- Printed electronics
- Artificial muscles
- Robotics
- Actuators, switches, relays
- Servo-control systems
- MEMS/NEMS
- Use on satellite and space exploration vehicles
- Utilization in aircraft design and construction

Benefits and Advantages

- Lightweight
- Low cost
- Rapid prototyping
- Robust – able to undergo millions of actuation cycles
- Simple assembly – self assembled in-situ

For more information about the inventor(s) and their research, please see Dr. O'Connell's research webpage