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Advancing the Arizona State University Knowledge Enterprise

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Remotely Tunable Soft Electronics

Variable electronic components are widely used in applications requiring any type of tuning (filters, transmitters, receivers and more). However, there is no standardized or uniform method of tuning remotely controlled electronic components, particularly for soft electronics or electronics that are difficult to access, such as in implants. Soft electronics are essential in future healthcare applications with flexibility, stretchability and bio-compatibility requirements such as wearable or implantable electronics.

Researchers at Arizona State University have developed a novel method of fabricating and tuning the characteristic properties, such as inductance, capacitance and resistance, of soft electronics. This method is both standardized and uniform and enables remote tuning in instances where the soft electronics are either inaccessible or difficult to access. Further, the soft electronics are able to maintain the tuned value without having to expend power to maintain that set value.

This novel method further advances and enhances the value of soft electronics and helps pave the way for future technologies in healthcare and robotics.

Potential Applications

- Wearable devices
- Implantable devices
  - GPS/ID chips (animals), brain-computer interfaces,
- Electronic skins
- Point of care devices
- Robotics

Benefits and Advantages

- Stretchable, flexible, bendable and tunable electronic components
- Standardized/uniform method of tuning inductors, capacitors and resistors

- Enables remote tuning while maintaining a tuned value without expending power
    - Does not interfere with biological tissue
- Retains mobility in highly confined spaces
- Housed in biocompatible materials

For more information about this opportunity, please see

Ilami et al - ACS Omega - 2019

For more information about the inventor(s) and their research, please see

Dr. Marvi's departmental webpage