

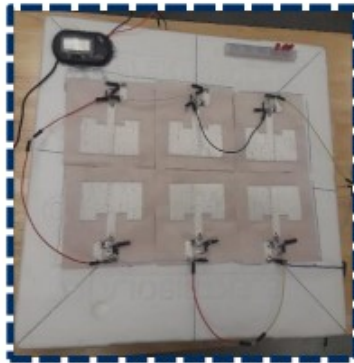
2.45 GHz Wearable Power Harvester on Textiles

Design an RF Power Harvesting System Capable of Powering an LCD Temperature Sensor or a Red LED using Wi-Fi Power

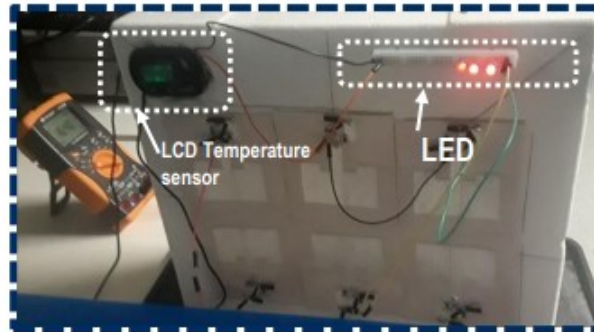


<https://www.techworm.net/2015/08/wifi-router-vulnerable-to-hacking-default-hard-coded-vulnerability.html>

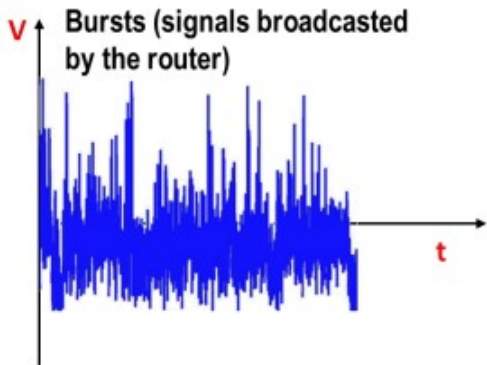
Commercial Wi-Fi Router



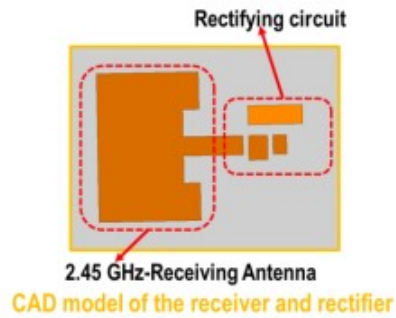
Rectenna Array



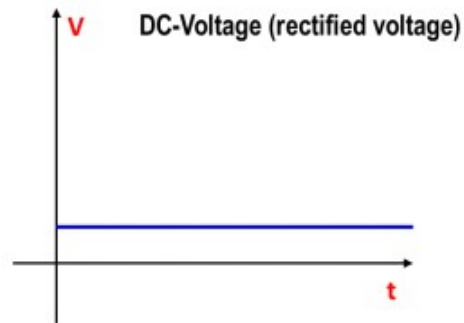
LED lit up
LCD sensor displays temperature



Bursts (signals broadcasted by the router)



CAD model of the receiver and rectifier

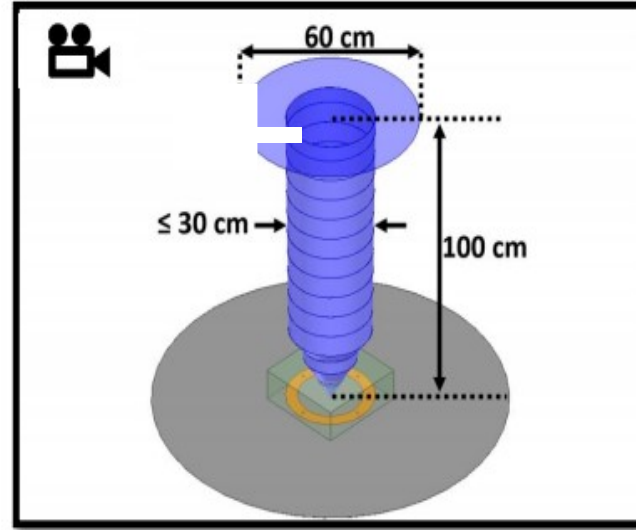
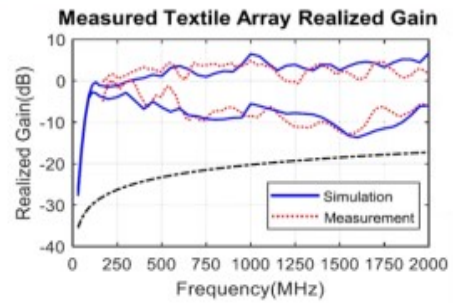
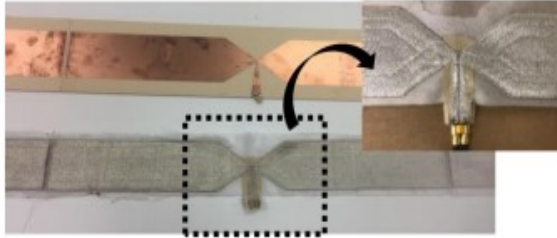


DC-Voltage (rectified voltage)

Textile Power Harvester Fabrication & Measurement Setup



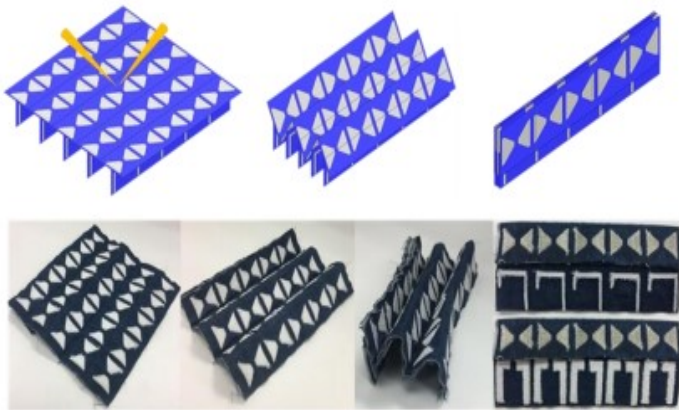
Foldable and Deployable Textile Phased Arrays



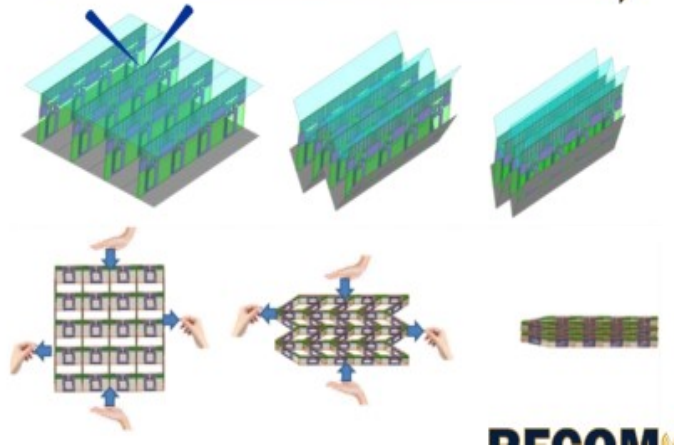
Deployable 4:1 30-160MHz Monopole CubeSat Antenna



Deployed Planar Stored



Deployed Low Angle Scanning Stored

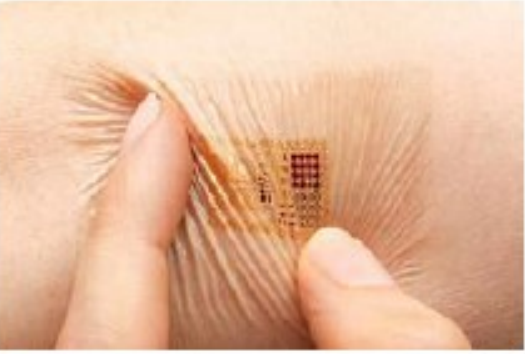
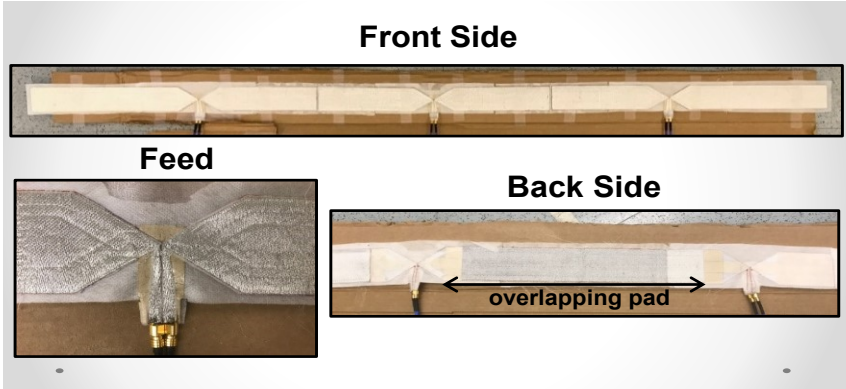
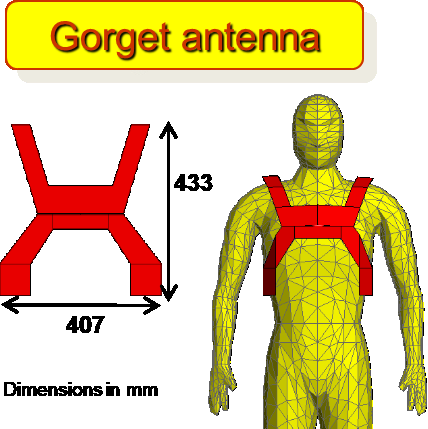


Accordion style Textile Origami Dipole Phased Arrays



Wearable/Foldable Antennas with Embedded Electronics

- Future radiators will be integrated with electronic transceivers with direct ADC/DAC chips
- Achieves conformity, durability and low profile

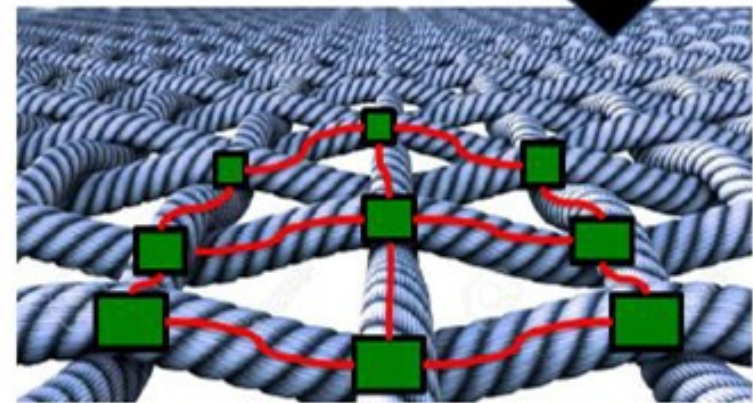
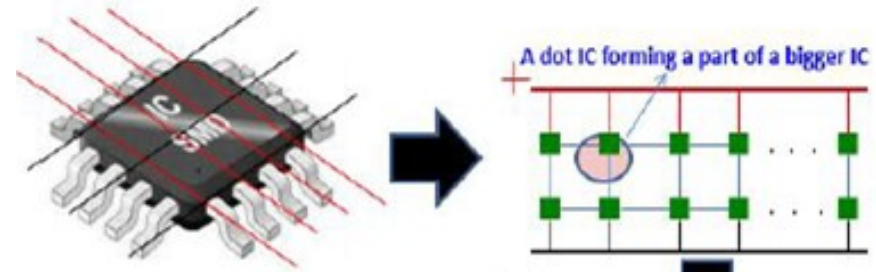


Circuit Embedded Textile Electronics

- Goal is to enable communications, IoT and sensing without using handhelds or discrete accessories.

Is it possible to have:

- circuits and ICs as part of clothing
- with wireless charging



Journal Publications:

1. J. Zhong, A. Kiourti, T. Sebastian, Y. Bayram and J. L. Volakis, "[Conformal Load-Bearing Spiral Antenna on Conductive Textile Threads](#)," in IEEE Antennas and Wireless Propagation Letters, vol. 16, pp. 230-233, 2017.
2. J. Zhong, C. W. Lee, D. Papantonis, A. Kiourti and J. L. Volakis, "[Body-Worn 30:1 Bandwidth Tightly Coupled Dipole Array on Conductive Textiles](#)," in IEEE Antennas and Wireless Propagation Letters, vol. 17, no. 5, pp. 723-726, May 2018.
3. S. Shao, A. Kiourti, R. J. Burkholder and J. L. Volakis, "[Broadband Textile-Based Passive UHF RFID Tag Antenna for Elastic Material](#)," in IEEE Antennas and Wireless Propagation Letters, vol. 14, pp. 1385-1388, 2015.
4. Z. Wang, L. Z. Lee, D. Psychoudakis and J. L. Volakis, "[Embroidered Multiband Body-Worn Antenna for GSM/PCS/WLAN Communications](#)," in IEEE Transactions on Antennas and Propagation, vol. 62, no. 6, pp. 3321-3329, June 2014
5. A. Kiourti and J. L. Volakis, "[Stretchable and Flexible E-Fiber Wire Antennas Embedded in Polymer](#)," in IEEE Antennas and Wireless Propagation Letters, vol. 13, pp. 1381-1384, 2014
6. A. Kiourti, C. Lee and J. L. Volakis, "[Fabrication of Textile Antennas and Circuits With 0.1 mm Precision](#)," in IEEE Antennas and Wireless Propagation Letters, vol. 15, pp. 151-153, 2016