

# Multi-Layer Inkjet-Printed Capacitors

---

## Inkjet-printed low cost high frequency capacitors for use in electronics

Inventors at Georgia Tech have developed a method for inkjet printing that enables the rapid fabrication of extremely high frequency (EHF) components in minutes at an extremely low cost, on practically any substrate. This multi-layer method enables the deposit of layered materials without disturbing previously deposited layers. Inkjet printing requires smaller equipment, which offers the flexibility and portability to print and modify in remote locations.

### Summary Bullets

- **Quick** — Rapid fabrication of extremely high frequency (EHF) components in minutes
- **Low cost** — Does not require a clean room and low chemical and material waste
- **Convenient** — Equipment is small enough to allow on-the-spot printing and modifications in remote locations

### Solution Advantages

- **Quick** — Rapid fabrication of extremely high frequency (EHF) components in minutes
- **Low cost** — Does not require a clean room and low chemical and material waste
- **Convenient** — Equipment is small enough to allow on-the-spot printing and modifications in remote locations

### Potential Commercial Applications

- RF capacitors and inductors
- Antennas
- Electronic devices
- Printed wearable systems
- Communication
- Filtering
- Energy storage — can be extended out of mm-Wave to super-capacitors

### Background and More Information

Flexible, multi-layer inkjet-printed capacitors with extremely high frequency are used for the fabrication of 2D and 3D antennas, as well as other passive components operating through mm-Wave frequencies. High frequency capacitors are used in the communication infrastructure field.

## **Inventors**

- Dr. Emmanouil Tentzeris  
Professor - Georgia Tech School of Electrical and Computer Engineering
- Benjamin Cook  
Graduate Research Assistant - Georgia Tech School of Electrical and Computer Engineering

## **IP Status**

: US9343233B2

## **Publications**

, -

## **Images**

Visit the Technology here:

[Multi-Layer Inkjet-Printed Capacitors](#)

---

<https://s3.sandbox.research.gatech.edu//index.php/print/pdf/node/3714>