

# The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

Tech ID: UTA 15:39

## Inks and Method to Produce Flexible, Transparent and Stretchable Circuits by Electro-Hydrodynamic Printing

**INVENTOR:** Muthu Wijesundara & Caleb Nothnagle

### TECHNOLOGY NEED

Current methods of printing circuits are complex and expensive. Available alternative methods waste lots of precious metals and cannot print a 5-10 micron thin film. Moreover, it is tiring to manage N number of electronic devices and the data stored on them. A flexible device with 2-in-1 role, i.e. size of a mobile and functionality of a tablet is needed. The PCB's available in market are not capable to meet these technical needs. The ability to stretch and fold high resolution circuits on demand is required. Hence an alternative product and a manufacturing method that will assist the companies to cut down cost are desired.

### INVENTION DESCRIPTION/SOLUTION

Researchers at UTARI have developed an innovative device and solution to print conductive ink via inkjet printers. It uses the electro-hydrodynamic printing method. This method reduces the use of precious metals while manufacturing circuits. Its ink can print stretchable and transparent circuits. Challenges of printing foldable sensors on flexible surfaces are also resolved. To make the circuits reliable for different applications, the composition of ink can be easily modified. A 5-10 microns thin film can be made by this method. This innovative printing nozzle is reusable, robust and quick to assemble. Moreover, the ink has excellent stability and dexterity for mass production.

### APPLICATIONS

- Flexible Displays
- PCB manufacturing
- Consumer Electronics
- Flexible Solar Cell
- Pressure Sensors
- Direct Device Printing

### KEY BENEFITS

- Flexible, transparent and stretchable.
- Faster production cycles
- Compatible on many surfaces
- Low Cost Solution
- Reduction in chemical use
- Reduction in use of precious metals.

### STAGE OF DEVELOPMENT

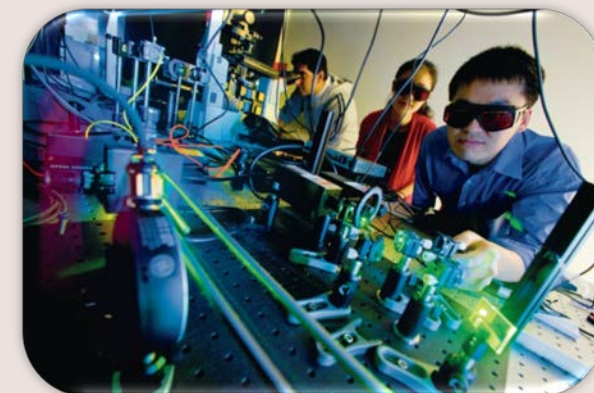
Prototyped and tested

### INTELLECTUAL PROPERTY STATUS

Patent Pending

### RELATED TECHNOLOGY

[UTA 13:31 Electrohydrodynamic \(EHD\) printing](#)



### More about the Inventor:

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