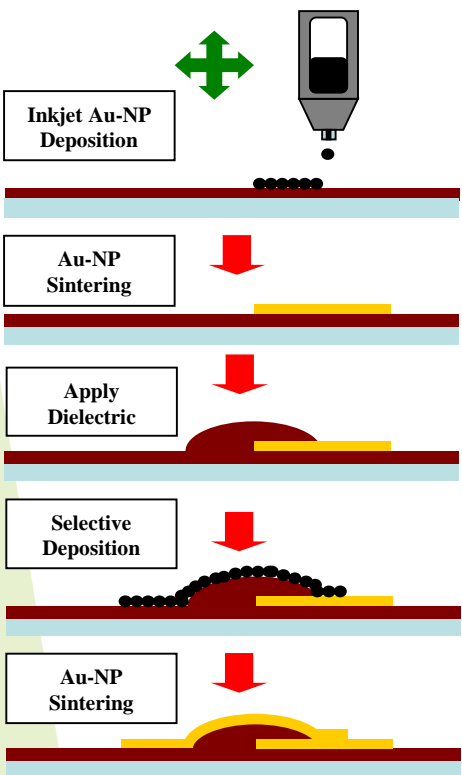




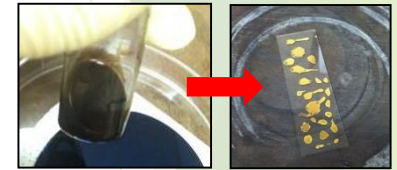
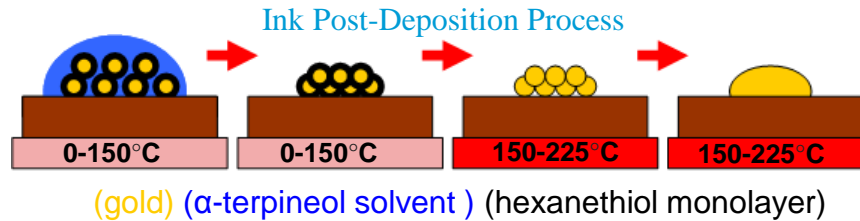
Developments in Additive Microfabrication using Inkjet Printed Gold

Robert C. Roberts and Norman C. Tien

Goal: Develop a low-temperature multilayer gold additive microfabrication process using the drop-on-demand inkjet deposition of hexanethiol-encapsulated gold nanoparticles for unconventional substrates and austere applications.



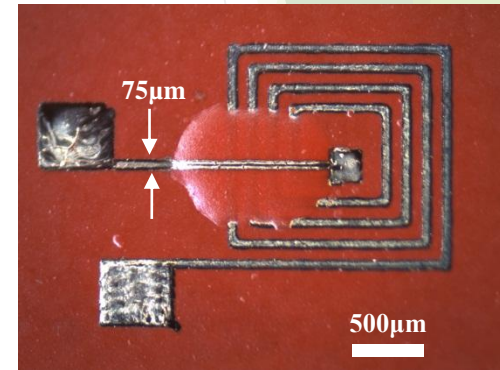
Fabrication Process Flow



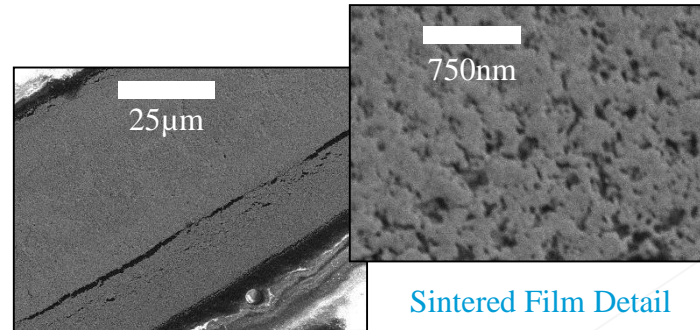
Before & After Sintering

Advantages: $<225^{\circ}\text{C}$ Maximum Temperature
 Ambient Pressure
 Large & Roll-to-Roll Substrate Compatible

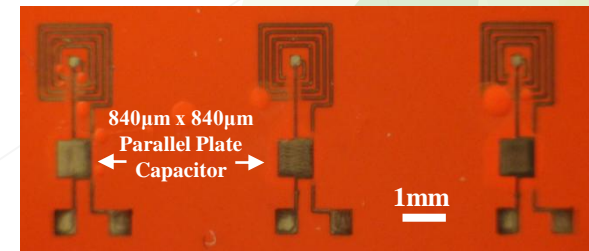
Typical Capabilities: @ 130°C , with $30\mu\text{m}$ diameter nozzle
 $75\mu\text{m}$ minimum feature size
 $1.9\mu\text{m}$ thick film (2 deposition passes)



Planar Spiral Inductor



Sintered Film Detail



L-C Tank Circuits