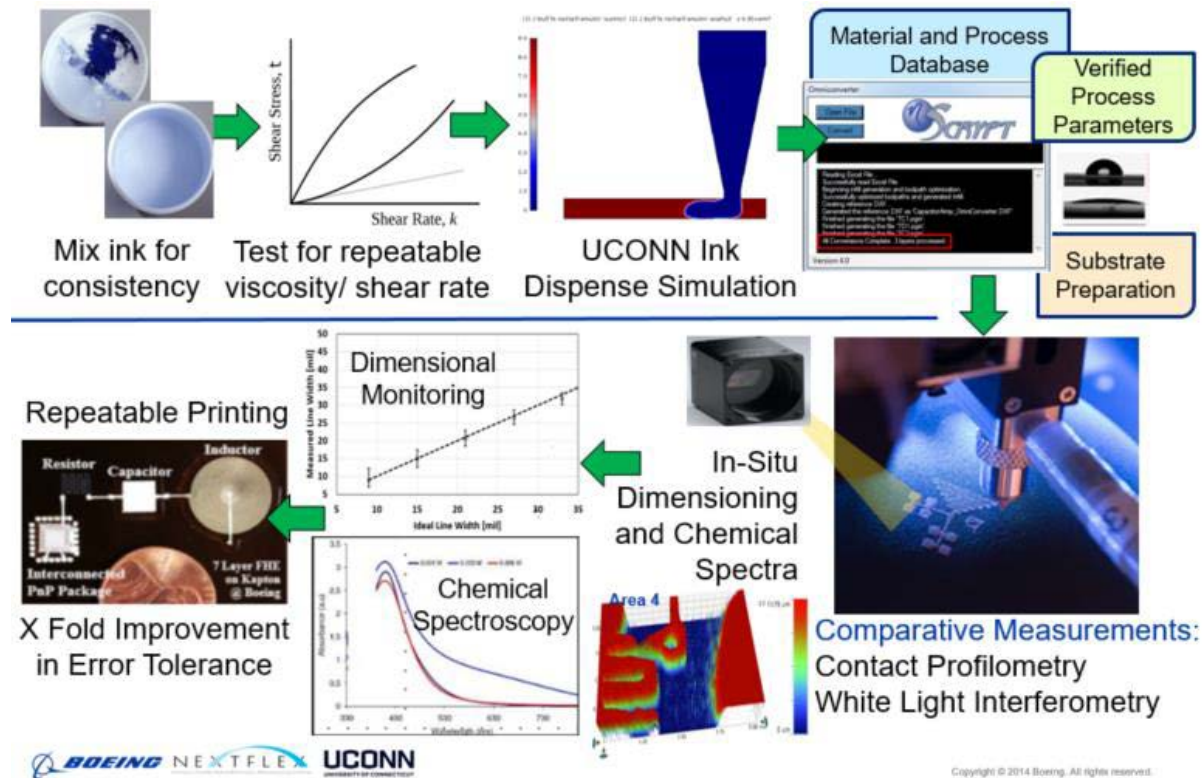


LEAD ORGANIZATION: Boeing

PROJECT: Printed Passives for FHE with Process Demonstration and Hyperspectral Metrology (PHHM)

ABSTRACT

The objective of this effort is to reduce process tolerances and improve repeatability of RLC circuits for low frequency circuit applications. During this one-year effort, Boeing and our research partners at the University of Connecticut (UConn) will utilize an nScript liquid dispense tool, a Meyer Burger inkjet printer, and a suite of electrical and metrology tests tools to improve the materials process and demonstrate methods for optimizing process flow. The Boeing team will evaluate how material characteristics, surface properties, nozzle flow, bake conditions, and machine repeatability affect the circuit performance when printed in moderately large batches over extended time intervals. Statistical evaluation of physical geometry and electronic behavior will be used to optimize process flow and manufacturability. Environmental performance of RLC circuits will also be studied using Military Standard 810 (MIL-STD 810) environmental testing criteria. At the end of this project, The Boeing Company will provide NextFlex and its membership with a manufacturing process that includes material properties, fabrication processes, selection rules for process sequencing, physical, and electrical tolerances. Next, the team will demonstrate a means of in-situ inspection of printed electronics during fabrication using multi-spectral evaluation of the surface. Boeing will develop hardware and software for open-loop process control using existing intellectual property (IP). Finally, the team will provide NextFlex with a set of equipment, software, and tool modifications to adapt the inspection system onto the existing nScript tool at the NextFlex Technology Hub in San Jose, CA.



Process optimization and metrology to mature multilayer passive circuit fabrication