

## **Fatigue of Aerosol Jet Printed Interconnections on Flexible Substrates**

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### **Abstract**

The development of reliable wearable monitors that are lighter and conforming to the human body while preserving operational integrity requires among other a general understanding of the fatigue behavior of traces on flexible substrates. The present study addresses effects of tensile loading on aerosol printed AgNP (silver nano-particles) traces. These traces are nano-porous and as such inherently brittle, but the presence of a flexible substrate has major effects on their behavior and prevents the detection of changes in trace properties through direct measurement of deformation vs. the load on the trace. Studies of the evolution of damage were therefore limited to characterization of the resistance vs. variations in strain. Interpretations of results were further complicated by the time-dependent viscoelastic deformation of the substrate. Nevertheless, systematic trends are appearing.