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Functional Structures for System Integrity and Security

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The 3D printing revolution is redefining manufacturing and has given rise to a new industry segment called Additive Manufacturing (AM). Assemblies of mechanical components can now be integrated into a single printed structure. A logical next phase in this revolution is to assimilate multiple technologies to functionalize these 3D printed structures. Some applications include embedding of simple sensors for structural health monitoring and tamper protection to fully integrating electronics onto nontraditional surfaces such as the inside shell of a housing. Electronic printing technologies provide an enabling tool to this end. This talk will describe work in printing large area sensors for temperature, strain and proximity detection applications. A critical aspect will also cover improvements made to aerosol based printing technologies to provide a more robust printing solution that both demonstrates improved printing performance over existing technologies and lowers the barrier to entry for high precision conformal printing of electronics.

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