Physical Assurance and Inspection of Electronics

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Globalization has made the semiconductor industry more susceptible to trust and security issues. Hardware Trojans, i.e., malicious modification to electronic systems, can violate the root of trust when the device or systems are fabricated/assembled in untrusted facilities. As the imaging and failure analysis tools excel in the resolution and capability, physical inspection based methods become more attractive in verifying such trust issues. On the contrary, such physical inspection methods are opening new capabilities for an adversary to extract sensitive information like secret keys, memory content or intellectual property (IP) compromising confidentiality and integrity. Different countermeasures have been proposed, however, there are still many unanswered questions. This talk will focus on the state of the art physical inspection/assurance methods, the existing countermeasures, related challenges to develop new countermeasures and a research roadmap for this emerging field.

Dr. Navid Asadi is an Assistant Professor in the ECE Department at the University of Florida. He investigates novel techniques for IC counterfeit detection and prevention, system and chip level decomposition and security assessment, anti-reverse engineering, 3D imaging, invasive and semi-invasive physical assurance, supply chain security, etc. Dr. Asadi has received several best paper awards from IEEE International Symposium on Hardware Oriented Security and Trust (HOST) and the ASME International Symposium on Flexible Automation (ISFA). He was also winner of D.E. Crow Innovation award from University of Connecticut. He is co-founder and the program chair of the IEEE Physical Assurance and Inspection of Electronics (PAINE) Conference.