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LARGE AREA RADIATION DETECTORS FOR SECURITY APPLICATIONS

ABSTRACT:

Thin-film electronics offer the possibility of true 3-D integration because active devices can be fabricated at any level within the system, which is often difficult with traditional semiconductor technology. Over the past several years we have been developing the unit processes to fabricate discreet devices and simple circuits. One potential application that benefits from both large area and integrated multifunctional thin-film devices are large area radiation detectors. Thin film detectors and electronics can offer the inherent benefits of ruggedness, selectivity, and low cost, which is typically not the case for radiation detectors. While digital X-ray detectors are commercially available, there are many applications for other types of radiation detectors to be used in security applications. I will discuss some of the requirements of these applications as well as some of our recent work on materials, devices and circuits that are being used in the development of large area radiation detectors. I will also present some of the issues related to the design and fabrication of these complex systems that incorporate many different materials. Experimental results for our thin-film based charged particle and neutron detectors will be presented.



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BIOGRAPHY:

Dr. Gnade received his Ph.D. from Georgia Institute of Technology in 1982. He joined the faculty at University of Texas at Dallas in 2003 as a professor. Prior to his appointment, he was the Chair of the Materials Science Department at UNT since 1998. For a few years (1996-1999), he was on a temporary assignment at the Defense Advanced Research Projects Agency (DARPA) where he managed or co-managed the High Definition Systems Program, the Molecular Electronics Program, and the Heterogeneous Integration of Materials on Silicon Program. He also actively engaged in research and managed several research and technology groups during his 15 years at Texas Instruments including the Si Materials and Processing research group, the field emission display advanced technology group, and the Advanced DRAM Materials group.