



The **Center for Detectors** presents a talk in  
the Detector Virtual Workshop



**HgCdTe Infrared Imaging Focal Plane Arrays: Today's King of the Hill for  
Single and Dual Band Sensors**

**Jim Bangs**

Raytheon Principal Engineering Fellow/ Principal Investigator Emerging  
Technology Advanced HgCdTe Programs

Monday, June 4<sup>th</sup>, 2012, 11:00 am – 12:00 pm, Innovation Center, Room 1600  
Cookies & Coffee at 10:30 am

Presentation will be broadcast at: <https://connect.rit.edu/dvw>



**Abstract**

For applications demanding focal plane arrays with the best possible infrared sensitivity in the visible through 14 $\mu$ m wavelength regimes, HgCdTe detectors have unsurpassed performance and technology and manufacturing maturity (TRL & MRL) and are likely to retain this leadership for at least the next 10 years. This talk will review infrared focal plane array figures of merit, detector technology considerations that factor into designing a detector array for a given application, state of the art performance capabilities of HgCdTe for single and dual band detector arrays and future directions for HgCdTe as well as other infrared imaging focal plane arrays.

**About the Speaker**

Mr. Jim Bangs has 25 years of experience at Raytheon Vision Systems (RVS) developing HgCdTe technology. Upon joining RVS in 1987 in the engineering rotation program, he spent 6 months running a HgCdTe Liquid Phase Epitaxial system, with subsequent rotations on projects developing HgCdTe JFETs and electronics design. The bulk of his career has been centered on HgCdTe detector development activities including development of high reliability detector architectures, the photo-voltaic HgCdTe detectors on MODIS-N (NASA's Terra & Aqua instruments), dual band, Large Format (developed high yield processes for fabricating European Southern Observatory's VISTA IR FPA), VLWIR, and MBE design and processes for fabricating detector arrays with HgCdTe on 6-inch Si wafers. From 2005 to 2010, he was the HgCdTe production line Technical Director that oversaw implementation of 6-inch HgCdTe automated fabrication processes into production. In 2009, Jim's Large Format IR&D team successfully developed the world's largest infrared focal plane array, a MWIR 4kx4k 20 $\mu$ m pitch HgCdTe/Si FPA. Since 2010, he has been primarily focused on the execution of challenging HgCdTe detector development programs. He is currently the Principal Investigator for AFRL's Surveillance Components Demonstration Program, and NVESD's High Definition Dual Band FPAs Development Program. Mr. Bangs obtained his MSEE with solid state emphasis from UCSB in 1987.

**About the Detector Virtual Workshop**

The Detector Virtual Workshop is a year-long NSF-funded program dedicated to the advancement of UV/O/IR detectors. It brings together people from around the world to discuss detector technologies. For more information, visit <http://ridl.cfd.rit.edu/> and click on the DVW tab.