

The future of single- to multi-band detector technologies

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Using classical optical components such as filters, prisms and gratings, to separate the desired wavelengths before they reach the detectors, results in complex optical systems composed of heavy components. A simpler system will result by utilizing a single optical system and a detector that responds separately and individually to each wavelength band. Therefore, continuous endeavors to develop the capability to reliably fabricate detector arrays that respond to multiple wavelength regions are needed.

This presentation will review the state-of-the-art single and multicolor detector technologies over a wide spectral-range, for use in space-based and airborne remote sensing applications. Discussions will be focused on current^{1,2} and the most recently developed focal plane arrays (FPA)^{3,4} in addition to emphasizing future development in UV-to-far infrared multicolor FPA detectors^{5,6} for next generation space-based instruments to measure water vapor and greenhouse gases. This novel detector component will make instruments designed for these critical measurements more efficient while reducing complexity and associated electronics and weight.

This presentation will focus on the on-going multicolor detector technology efforts at NASA Langley Research Center, NASA Jet Propulsion Laboratory, Rensselaer Polytechnic Institute, and others.

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