

with a cube corner inset co-aligned with the center of the sphere. These devices are available commercially.

- The laser tracker target is then placed in the calibration nest of the laser tracker, zeroed, and hand-carried to the position of the laser tracker nest near the interferometer. The laser tracker beam must be continuously locked to the tracker to stay in lock. This is a typical mode of the laser tracker used for absolute metrology.
- The spherical laser tracker is positioned so that the shiny (non-retro)

surface of the tracker target is aligned to the transmission sphere. It is then translated until a nulled interferogram is observed. At this point, the center of the laser tracker target is at the focus of the transmission sphere (and thereby at the ROC of the OUT.)

- The  $x,y,z$  position of the tracker target is then acquired by the laser tracker.
- The laser tracker target is then removed from the nest, and without losing lock to the tracker, is hand-carried to the OUT. It is then placed on the OUT at its center (which has a nest on its surface pre-aligned to the center).

- The tracker then acquires the  $x,y,z$  position of the laser tracker target.
- The data is reduced and the two positions calculated. The position at the ROC is directly at the ROC, while the position on the mirror is displaced by the radius of the laser tracker target. This radius must be added to the distance measurement in the calculation.

This process is repeated to allow redundancy of the measurement.

*This work was done by John Hagopian and Joseph Connelly of Goddard Space Flight Center. Further information is contained in a TSP (see page 1). GSC-15941-1*

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## n-B-pi-p Superlattice Infrared Detector

*NASA's Jet Propulsion Laboratory, Pasadena, California*

A specially designed barrier (B) is inserted at the n-pi junction [where most G-R (generation-recombination) processes take place] in the standard n-pi-p structure to substantially reduce generation-recombination dark currents. The resulting n-B-pi-p structure also has reduced tunneling dark currents, thereby solving some of the limitations to which current type II strained layer superlattice infrared detectors are prone. This innovation is compati-

ble with common read-out integrated circuits (ROICs).

*This work was done by David Z. Ting, Sumith V. Bandara, Cory J. Hill, and Sarath D. Gunapala of Caltech for NASA's Jet Propulsion Laboratory. For more information, contact [iaoffice@jpl.nasa.gov](mailto:iaoffice@jpl.nasa.gov).*

*In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:*

*Innovative Technology Assets Management  
JPL*

*Mail Stop 202-233*

*4800 Oak Grove Drive*

*Pasadena, CA 91109-8099*

*E-mail: [iaoffice@jpl.nasa.gov](mailto:iaoffice@jpl.nasa.gov)*

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