

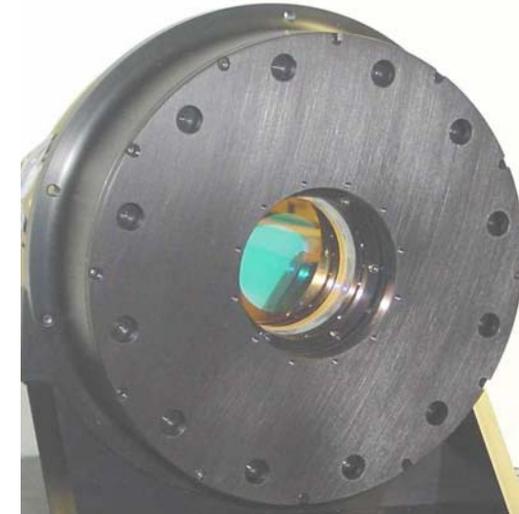
NASA SBIR/STTR Technologies

One-Dimensional Tunable Photonic-Crystal IR Filter
PI: Dr. Vladimir Markov/ MetroLaser, Inc. - Irvine, CA
Contract No. NNL07AA07C

Identification and Significance of Innovation

- Photonic crystals-based tunable IR bandpass filter.
- Bandpass ≤ 0.01 of tunable range; tunability range $\leq 100 \text{ cm}^{-1}$ (variable);
acceptance angle $> 1^\circ$; background rejection $< 30 \text{ dB}$;
aperture ~ 2 inch.
- Electronically controlled transmission wavelength tuning.

Expected TRL Range at end of Contract: 4



Technical Objectives and Work Plan

- Demonstrated the feasibility of an ultra-narrow tunable optical bandpass filter.
- Was demonstrated that an optical filter, based on specific features of photonic crystals, provides the stated specifications.
- Analyzed the filter performance and selected optimal structure parameters
- Designed and assembled ultra-narrow tunable bandpass filter for LWIR spectral area 8 – 12 μm .

Non-Proprietary Data

NASA and Non-NASA Applications

- Expand capabilities of NASA's Earth Science Enterprise:
 - high resolution multi-spectral imaging
 - high accuracy measurements of atmospheric and surface parameters from space and airborne platforms
- Wide range of commercial applications:
 - Combustion diagnostics, spectroscopic monitoring

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