

Optical Satellite Consortium Open House - Receivers for Satellite Communications

Oliver Pitts, NRC

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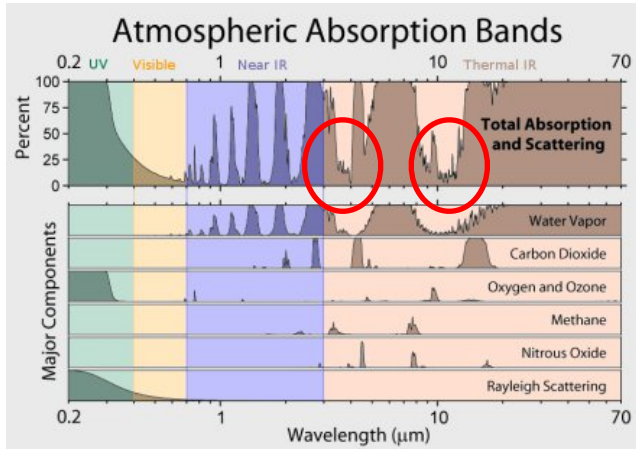
Goals for Receiver development

- Investigate alternative wavelengths for better atmospheric transmission: MWIR / LWIR
- Improve receiver sensitivity to mitigate link budget limitations
- Miniaturization and cost / SWaP reduction of receiver components

Project partners:

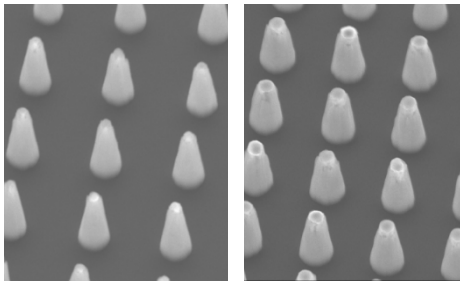


Atmospheric transmission improvement



- Atmospheric transmission windows: MWIR / LWIR
- Improved transmission through fog / haze conditions compared to Visible / NIR
- Approaches being investigated:
 1. InAsSb Nanowire-based photodetectors
 2. Wavelength conversion using nonlinear optical crystal

Potential for lower fabrication cost / higher sensitivity / higher temperature operation compared to existing technologies for these wavelength bands



High sensitivity receivers

Approaches being investigated:

1. Kramers-Kronig receivers: phase-sensitive detection using a single-photodiode configuration
 - Lower cost / complexity compared to coherent receivers with 4 photodiode pairs
2. Single Photon Avalanche detectors fabricated in CMOS technology
 - Low fabrication cost and ease of integration, ultra-high sensitivity

Project Team / Collaborators

Dr. Ray LaPierre, McMaster University

Dr. Chang-qing Xu, McMaster University

Dr. Shiva Kumar, McMaster University

Dr. Jamal Deen, McMaster University

Dr. Oliver Pitts, National Research Council Canada

Thank you!

