Project Introduction

Accurate measurement of atmospheric parameters with high resolution needs advanced lasers. In this SBIR program we propose to develop innovative Q-switched high power 2-micron fiber laser with pulse energy greater than 10mJ, repetition rate of 10Hz to 1KHz, and pulse duration of 200ns using innovative highly efficient Tm-doped glass fiber. This new fiber laser will be an all-fiber laser system consisting of actively Q-switched fiber laser and fiber amplifiers. This proposed all-fiber laser system is compact, highly efficient, robust and highly reliable, which is especially suited for NASA's application where operating environment is always extremely rough. In Phase I we will design and fabricate Tm-doped glasses, design and fabricate single mode and double cladding single mode Tm-doped fibers, and demonstrate Q-switched single frequency 2-micron fiber laser and amplifiers.

Primary U.S. Work Locations and Key Partners

<table>
<thead>
<tr>
<th>Organizations Performing Work</th>
<th>Role</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>★ Langley Research Center (LaRC)</td>
<td>Lead Organization</td>
<td>NASA Center</td>
<td>Hampton, VA</td>
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<tr>
<td>AdValue Photonics, Inc.</td>
<td>Supporting Organization</td>
<td>Industry</td>
<td>Tucson, AZ</td>
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</tbody>
</table>
### Primary U.S. Work Locations

| Arizona | Virginia |

### Project Management

**Program Director:**
Jennifer L. Gustetic

**Program Manager:**
Carlos Torrez

### Technology Areas

**Primary:**
- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

For more information and an accessible alternative, please visit: https://techport.nasa.gov/view/7882