

RL ASSOCIATES

DEVELOPMENT OF A HIGH-EFFICIENCY ULTRA NARROWBAND VOLUME HOLOGRAPHIC OPTICAL FILTER



One of RL Associates' Optical Filters

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Topic Number: N97-006
(NAVAIR)

SBIR Investment: \$895K
Project Revenue: \$11.5M

RL Associates

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About the Technology

RL Associates (RLA) has developed extremely efficient ultra-narrowband optical filters for various Light Detection and Ranging (LIDAR) applications such as detecting cloud formations and airborne and underwater objects such as mines and submarines. The technology was developed in response to the Navy's need for laser radar for underwater detection of mines, near the water surface and shore, where the acoustic techniques are limited. RL Associates' narrow linewidth, high efficiency optical filter greatly enhances the performance of all types of detection systems. In the RLA system, a laser transmitter illuminates the target and some portion of the laser light is reflected back from the target and becomes incident on the imaging detector.

RLA has received funding from the Office of Naval Research to develop the concept of a FireLidar system, which would be used to overcome some of the shortcomings of thermally imaging systems. The FireLidar unit is either mounted on the firefighters' helmet or hand-held, and consists of a diode laser transmitter, an ultra-narrowband optical filter, and a sensitive imaging camera.

Military and Commercial Significance

RLA's efficient ultra-narrowband optical filter reduces the solar background scatter by orders of magnitude thus allowing equal daytime/nighttime performance. RLA's optical filter is much more rugged than existing models and can withstand the vibrations, mechanical conditions, and the extremes of temperature associated with spaced-based or airborne military platforms. A key aspect of this system is the ultra-narrowband optical filter that only allows the reflected laser light through and rejects any and all other intense light. The systems maintains eye safety while allowing use of a high power optical transmitter for increased image contrast and system sensitivity.

About the Company

RL Associates, Inc. (RLA) specializes in design and fabrication of electro-optic systems and devices. The company is currently developing a narrow-band optical filter in a thick volume holographic material to reduce ambient background optical signals detected by LIDAR systems. The company's proprietary technology is sponsored by the SBIR programs at NAVAIR and ONR. RLA's business base has grown from less than \$100,000 of SBIR funds in 1996 to more than \$1.75 million in 2004; approximately \$1.3 million of this revenue is from non-SBIR transition.

APPLICATIONS

- NAVAIR - Ocean Water Lidar systems
- Office of Naval Research - Future Naval Capabilities for Platform Protection
- Naval Research Laboratory - Solar and astronomical observation
- Missile Defense Agency - Targeting and tracking system applications