

**Applications:**

- Night vision
- Field emission displays (FEDs)
- Phototubes
- Solid state (FED) lighting
- Photon detectors
- Mass spectrometer detectors

**Benefits:**

- Reduced cost
- Reduced device size
- More robust
- Longer device life

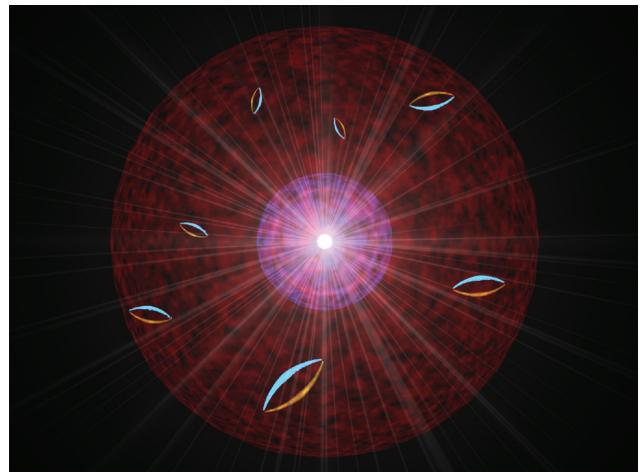
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**Summary:**

Electron multipliers are devices that provide amplification of an incident electron flux and enable the detection of incident particles (e.g., photons, ions, electrons). Electron multipliers are widely used in night-vision goggles and in laboratory equipment such as mass spectrometers. Electron multipliers can also be used to improve the performance of field emission displays. Unfortunately, most electron multipliers are relatively large, costly, and fragile. Los Alamos National Laboratory (LANL) has developed a small, inexpensive, and physically robust electron multiplier. If a larger multiplier is needed, LANL's compact design may be scaled up for a large, yet inexpensive, electron multiplier.



Electron multipliers currently sell for between \$500 and \$1,000 each in the United States. One market opportunity for this technology is consumer night vision devices, for which a low-cost electron multiplier would enable market growth. Currently, high-quality consumer night-vision goggles sell for between \$1,500 and \$3,000, and a lower-priced and more durable electron multiplier would allow for aggressive pricing aimed at a broader consumer market. The current total night vision market is about \$700 million annually. Night vision, which has already appeared in some high-end vehicles, is expected to be incorporated in more automobile heads-up displays. Raytheon has estimated that 500,000 night-vision-equipped automobiles would be sold by 2006. A second market opportunity for this technology is field emission displays (FEDs). An FED is an emerging type of display that delivers the high image quality of cathode ray tube (CRT) displays along with a flat geometry and relatively low power consumption. Existing applications of FEDs include medical imaging devices and FED technology is a contender for general display applications. LANL's compact electron multiplier can provide significantly extended lifetime for FEDs.

A company based on LANL's compact electron multiplier could engage in a straight licensing business model, a component manufacturing business model, or a direct-to-consumer business model.

**Development Stage:**

Working prototype

**Patent Status:**

Patent pending

**Licensing Status:**

Available for exclusive or non-exclusive licensing.