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Inventors

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Biology-based Night Vision Devices

Night vision technology was originally developed in the 1950's and has been an essential tool for the military, police, firefighters and people in many other industries ever since. Many night vision devices (excluding thermal imaging systems) work by taking in existing ambient light and converts the photons into electrons which are then amplified and accelerates them against a phosphorus screen that converts them back into visible light. Unfortunately, these systems are bulky, not very efficient, expensive and have reduced capabilities in extremely low light levels.

Researchers at Arizona State University have developed a novel biochemistry-based light amplification system that transfers light from the IR spectra (and even some NIR/thermal radiation) into the visible blue-green spectra. This highly efficient system utilizes specific catalytic activity that results in signal amplification allowing very low levels of light to be intensified to a visibly significant luminescence. Because this system is biology based, it does not require a source of external power. Additionally, this device can be formed as a thin film between two thin pieces of plastic/glass, making this device highly compact and lightweight.

This technology amplifies available ambient light using a novel biological system that is both lightweight and compact thus it has great utility in many night vision applications.

Potential Applications

- Night Vision devices/Thin films (Military, Police, Fire Fighters, Security, etc.)
 - Helmet visors/screens
 - Contact lenses
 - Goggle lenses
 - Driver viewers
 - Weapon sights & mounts

Benefits and Advantages

- Works in extremely low light levels
- Doesn't require phosphor screens which are less efficient
 - This system is 92% efficient
- Can be formed as a thin film
 - Can be utilized to create devices that are lightweight and small sized
- Doesn't require an external power source

For more information about the inventor(s) and their research, please see [Dr. La Belle's laboratory webpage](#)

