

# JUSTIA

## Laws & Legal Resources.

### Patents by Inventor Garret R. Moddel

Garret R. Moddel has filed for patents to protect the following inventions. This listing includes patent applications that are pending as well as patents that have already been granted by the United States Patent and Trademark Office (USPTO).

#### **Light modulating eyewear assembly**

**Patent number:** 6760080

**Abstract:** The present invention, in accordance with one embodiment, provides for a light modulating cell assembly especially suitable as eyewear including a detector and a light blocking arrangement at least partially surrounding a detector for allowing only light from a limited range of ambient directions to directly reaching said detector. In accordance with another embodiment there is a light transmissivity control arrangement including auxiliary means for controlling the state of said light modulating medium.

**Type:** Grant

**Filed:** August 19, 1999

**Date of Patent:** July 6, 2004

**Inventors:** Garret R. Moddel, Stephen C. Shear

#### **Display having gradient response pixels**

**Patent number:** 5952988

**Abstract:** A display includes a plurality of individually electrically controllable pixels. Each pixel has a layer of light controlling medium extending over a predetermined area of the pixel. The light controlling medium is responsive to electrical fields directed through the area of the light controlling medium for controlling the light passing through the pixel as a predetermined function of the magnitude of the electric field. Each pixel has an electric field directing arrangement for directing an electric field through the layer of light controlling medium of the pixel. The electric field for each pixel is controllably variable

over the area of the light controlling medium of the pixel such that the light passing through the area of the light controlling medium of the pixel is controlled in a manner that varies over the area of the pixel depending on the variable electric field.

**Type:** Grant

**Filed:** November 12, 1996

**Date of Patent:** September 14, 1999

**Assignee:** University Technology Corp

**Inventor:** Garret R. Moddel

**Liquid crystal eyewear with two identical guest host subcells and tilted homeotropic alignment**

**Patent number:** 5943104

**Abstract:** Light responsive, transmissivity variable eyewear utilizing two specifically configured liquid crystal cells and a method of making the cells is disclosed. The cell itself includes a pair of spaced apart transparent substrates in confronting parallel relationship to one another, transparent electrodes exposed over the outer surfaces of the substrates and connectable to a voltage control arrangement, a liquid crystal mixture contained between the substrates and tilted homeotropic alignment layers formed on the inner confronting surfaces of the substrates. The liquid crystal mixture contains a liquid crystal material with a negative dielectric anisotropy and dichroic dye molecules. All of which cooperate with one another such that the cell is highly transparent indoors, that is, out of the sunlight and is much less transparent, that is dark, in the sunlight.

**Type:** Grant

**Filed:** March 25, 1997

**Date of Patent:** August 24, 1999

**Assignee:** University Technology Corporation

**Inventors:** Garret R. Moddel, David Doroski

**Methods for detection of gram negative bacteria**

**Patent number:** 5869272

**Abstract:** Method for the determination of chlamydial or gram negative bacterial antigen comprising contacting a sample potentially containing extracted antigen with an optically active surface comprising an attachment layer, and a layer of non-specific protein.

**Type:** Grant

**Filed:** May 31, 1995

**Date of Patent:** February 9, 1999

**Assignee:** Biostar, Inc.

**Inventors:** Gregory R. Bogart, Garret R. Moddel, Diana M. Maul, Jeffrey B. Etter, Mark Crosby

**Silicon quantum dot laser**

**Patent number:** 5559822

**Abstract:** Dynamic variation in the color produced by a silicon quantum dot laser is achieved by utilizing segmented sections or patches of quantum dots of differing sizes to produce different colors of light. The amount of each color of light produced is controlled by selectively biasing the segments of quantum dots. The light is caused to resonate coherently and is emitted out by a diffraction grating. The dynamic variation in the color of light produced by such a device makes it useful as a multicolor pixel in a color display of images.

**Type:** Grant

**Filed:** June 7, 1995

**Date of Patent:** September 24, 1996

**Assignee:** The Regents of the University of Colorado

**Inventors:** Jacques I. Pankove, Garret R. Moddel, Kenneth Douglas

**Methods for detection of an analyte**

**Patent number:** 5541057

**Abstract:** Method for detecting the presence or amount of an analyte of interest in a sample by providing a substrate having an optically active surface exhibiting a first color in response to light impinging thereon, and exhibiting a second color comprising a combination of wavelengths of light different from the first color or comprising an intensity of at least one wavelength of light different from the first color, in response to the light when the analyte is present on the surface in an amount selected from any one of 0.1 nM, 0.1 ng/ml, 50 fg, 2.times.10.sup.3 organisms comprising the analyte; and contacting the optically active surface with a sample potentially comprising the analyte of interest under conditions in which the analyte can interact with the optically active surface to cause the optically active surface to exhibit the second color when the analyte is present.

**Type:** Grant

**Filed:** June 10, 1993

**Date of Patent:** July 30, 1996

**Assignee:** Biostar, Inc.

**Inventors:** Gregory R. Bogart, Garret R. Moddel, Diana M. Maul, Jeffrey B. Etter, Mark Crosby

**Devices and methods for detection of an analyte based upon light interference****Patent number:** 5482830

**Abstract:** Device for detecting the presence or amount of an analyte of interest, having a substrate possessing an optically active surface which exhibits a first color in response to light impinging thereon, and exhibits a second color comprising a combination of wavelengths of light different from the first color or comprising an intensity of at least one wavelength of light different from the first color, in response to the light when the analyte is present on the surface of any amount selected from 0.1 nM, 0.1 ng/ml, 50 fg, and 2.times.10.sup.3 organisms comprising the analyte.

**Type:** Grant**Filed:** June 10, 1993**Date of Patent:** January 9, 1996**Assignee:** Biostar, Inc.**Inventors:** Gregory R. Bogart, Garret R. Moddel, Diana M. Maul, Jeffrey B. Etter**Devices for detection of an analyte based upon light interference****Patent number:** 5468606

**Abstract:** Device for detecting the presence or amount of an analyte of interest, having a substrate possessing an optically active surface which exhibits a first color in response to light impinging thereon, and exhibits a second color comprising a combination of wavelengths of light different from the first color or comprising an intensity of at least one wavelength of light different from the first color, in response to the light when the analyte is present on the surface in any amount selected from 0.1 nM, 0.1 ng/ml, 50 fg, and 2.times.10.sup.3 organisms comprising the analyte.

**Type:** Grant**Filed:** July 31, 1992**Date of Patent:** November 21, 1995**Assignee:** Biostar, Inc.**Inventors:** Gregory R. Bogart, Garret R. Moddel, Diana M. Maul, Jeffrey B. Etter**Self-powered optically addressed spatial light modulator****Patent number:** 5177628

**Abstract:** A self-powered liquid crystal spatial light modulator is disclosed having a pair of spaced transparent glass plates, on each plate of which a transparent electrically conductive film is coated so as to be in confronting relation. A voltage/current generating, photovoltaic/photodiode, light sensitive layer is coated onto one of the conductive films. A

liquid crystal layer is confined between the other conductive film and the light sensitive layer. A shorting circuit element connects the two conductive films. This shorting circuit element may be internal or external to the spatial light modulator. A pixel area of the spatial light modulator is addressed by a beam of light that illuminates the pixel area and operates to activate a corresponding area of the light sensitive layer. The voltage/current that is generated in this area of the light sensitive film causes a current to flow through the shorting circuit element, to thereby activate, switch or charge the corresponding area of the liquid crystal layer.

**Type:** Grant

**Filed:** April 24, 1990

**Date of Patent:** January 5, 1993

**Assignee:** The University of Colorado Foundation, Inc.

**Inventor:** Garret R. Moddel

#### **Optically addressable spatial light modulator**

**Patent number:** 4941735

**Abstract:** A liquid crystal spatial light modulator is disclosed having a pair of spaced transparent plates on which two electrically conductive films are coated in confronting relation. A continuous or discontinuous photosensitive film is coated on one of the conductive films. A bistable ferroelectric liquid crystal is confined between the other conductive film and the photosensitive film. An activating voltage source is applied to the conductive films. Modulator pixels are defined by a plurality of small electrically conductive elements that are carried by the photosensitive film. These conductive elements may be either transparent to a reading wavefront, or they may be reflective to a reading wavefront. An apertured film is also mounted on the photosensitive film substantially coplanar with the conductive elements.

**Type:** Grant

**Filed:** March 2, 1989

**Date of Patent:** July 17, 1990

**Assignee:** University of Colorado Foundation, Inc.

**Inventors:** Garret R. Moddel, Kirstina M. Johnson

#### **Electrically isolated semiconductor integrated photodiode circuits and method**

**Patent number:** 4612408

**Abstract:** An interconnected array of solar cell or photodiode devices is formed by a method which includes the steps of forming on one major surface of a semiconductor wafer a plurality of said devices, forming grooves in said one major surface extending partway

into said substrate between adjacent said devices, forming an oxide layer on selected portions of said one major surface and on the surfaces of said grooves, filling the grooves with an insulating material, forming metal interconnects between adjacent devices extending over said grooves and insulating material, attaching said one major surface to an insulating support, and severing through the wafer into the grooves from the other major surface to separate adjacent devices while leaving the metal interconnects.

**Type:** Grant

**Filed:** October 22, 1984

**Date of Patent:** September 16, 1986

**Assignee:** Sera Solar Corporation

**Inventors:** Garret R. Moddel, Lee A. Christel, James F. Gibbons

#### **Pulse anneal method for solar cell**

**Patent number:** 4539431

**Abstract:** A solar cell including a pulse annealed layer of crystalline, amorphous or polycrystalline semiconductor material of one conductivity type and either a layer of opposite conductivity type or a liquid electrolyte forming a collector junction therewith. A method of improving the characteristics of a solar cell including at least one layer of crystalline, amorphous or polycrystalline semiconductor material which includes the step of pulse annealing said semiconductor material.

**Type:** Grant

**Filed:** June 6, 1983

**Date of Patent:** September 3, 1985

**Assignee:** Sera Solar Corporation

**Inventors:** Garret R. Moddel, James F. Gibbons