Multiple Quantum Wells for Optical Spectral Concentrator and Optical Energy Transport

Tech ID: 19930 / UC Case 2009-016-0

TECHNOLOGY DESCRIPTION

UC San Diego researchers have developed a method and device design for the spectral concentration of multi-wavelength light (e.g., solar energy ranging from far infrared to ultraviolet, into light of wavelengths within a narrow spectral width) and subsequent transport of the concentrated output light. This wavelength conversion is enabled in the invention by a semiconductor photo-detecting device that incorporates multiple quantum wells. The spectrally concentrated output light is such that its constituent wavelengths are suitable for transmission over optical fiber. In the example of sunlight impinging upon the device, the output light can be routed through optical fiber to irradiate photovoltaics with bandgaps matching the narrow output spectral width, thus augmenting the photocurrent and solar cell efficiency.

APPLICATIONS

Applications of this spectrally concentrated, fiber-transported output light include remote conversion of light energy to electricity for general purpose needs, as well as room heating, room illumination, or solar illumination for agriculture without first converting to electrical energy.

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INTELLECTUAL PROPERTY INFO

This technology is currently patent pending and available for sponsored research and/or licensing.

RELATED MATERIALS

- Winning Entry in *2008 Clean Tech Innovation Challenge*
- http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=793

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20110247691	10/13/2011	2009-016

CONTACT

University of California, San Diego
Office of Innovation and Commercialization
innovation@ucsd.edu
tel: 858.534.5815.

OTHER INFORMATION

KEYWORDS

multiple quantum well, MQW, photovoltaics, wavelength conversion, optical fiber, optical grid

CATEGORIZED AS

- **Optics and Photonics**
  - All Optics and Photonics
- **Energy**
  - Solar

RELATED CASES

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