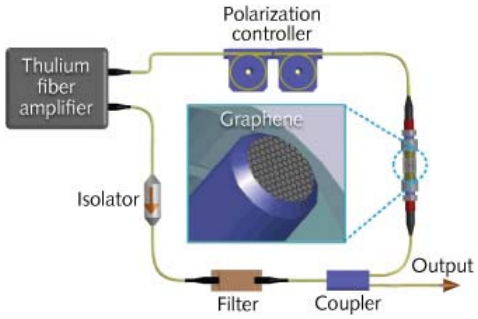
Gra...elivers ultrashort mid-IR laser pulses

01/14/2...
By Gail ...
Senior ...

Ultrafas...-infrared (mid-IR) lasers are of great interest due to their potential in applications ranging from medicir...ntal monitoring to materials processing and free-space optical communications. The most commo...delock these lasers relies on semiconductor saturable absorbers that require expensive growth techniq...ed with ion implantation to reduce response time, and do not allow broadband operation. Novel nonline...s working in the mid-IR with better performance, cheaper fabrication, and easier integration are thus of



Researchers at Cambridge University (Cambridge, England) and Imperial College London (London, England) have demonstrated that graphene is a promising broadband saturable absorber with ultrafast response time, easy fabrication and integration, and mechanical and environmental robustness. When used as a modelocker for ultrafast thulium-doped fiber lasers emitting at 1.94 µm, graphene can generate 3.6 ps laser pulses at a repetition rate of 6.4 MHz and approximately 0.4 nJ of energy with 6 ps timing jitter. Another collaboration between Cambridge University and the University of St. Andrews (Fife, Scotland) exploits single-layer graphene to modelock a high-power (270 mW) ultrafast (transform-limited 410 fs) solid-state laser at 2 µm. These results showcase the great potential of graphene for simple, low-cost, stable mid-IR ultrafast solid-state and fiber lasers. *Contact Andrea C. Ferrari at* acf26@cam.ac.uk.

Post

0 Comments

RSS | Subscribe

EDIT

Open F... proces...

Laser M... now!

Laser M... Unlimit...

Femtos... bubble...

4 Facebook

1 Twitter

1 LinkedIn

6 Share

...tes R&D-to-commercialization

...inar a month away--register

...Forecast from Strategies ...ore-release ordering

...gery affected by cavitation

RECENT BLOGS

In-air touch-enabled display
Thu Jan 10 16:31:00 CST 2013 - Photon Focus

Zero refractive index
Tue Jan 08 14:27:00 CST 2013 - Spectral Bytes

Would you "iRobot" with Jules?
Mon Jan 07 11:03:00 CST 2013 - Photon Focus

Marketing people LOVE -- really
Wed Jan 02 15:57:00 CST 2013 - Marketing for Engineers

Top photonics articles in 2012 point to 2013
Wed Jan 02 08:10:00 CST 2013 - Photon Focus

How laser 'printing' builds DNA
Thu Dec 20 15:17:00 CST 2012 - Spectral Bytes

Display technology getting ahead of the market
Wed Dec 12 11:40:00 CST 2012 - Spectral Bytes

Holmium for the holidays
Mon Dec 10 14:24:00 CST 2012 - Photon Focus

Bright future for silicon
Fri Nov 30 14:56:00 CST 2012 - Spectral Bytes

Don't get discouraged
Tue Nov 27 16:34:00 CST 2012 - Larry's VC View Blog

View More Blogs

MOST POPULAR ARTICLES

Organic PV efficiency reaches 12%: Heliatek breaks its prior record

MEDICAL APPLICATIONS OF FIBER-OPTICS: Optical fiber sees growth as medical sensors

First Solar Inc Files Patent Application for Powder Feed Rate Sensor

SPECTROPHOTOMETRY: ChromaID scanner challenges traditional spectrophotometry

TECHNOLOGY REVIEW 2012: Top 20 photonics innovations of 2012 light the way to future advances

DETECTORS AND IMAGING

Microtech Instruments tunable OPO is pumped by a picosecond fiber laser

NANOPHOTONIC METAMATERIALS: Nanocubes create tunable metamaterial absorber

Open Photonics facilitates R&D-to-commercialization process

RECENT ARTICLES

AMS Technologies, Powerlase Photonics form pan-European agreement

Microtech Instruments tunable OPO is pumped by a picosecond fiber laser

Laser shutters from CVI Melles Griot maintain laser-safe conditions

LASER BEAM COMBINERS: Apodized combiner packs in the laser-diode beams

FROM THE ARCHIVES

3D solar cells generate up to 20 times more energy
05/11/2012

Northrop Grumman demonstrates anti-cruise missile laser weapon
05/06/2012

Quantum-dot VCSELs can emit anywhere in the visible spectrum
04/30/2012

Terahertz microchip could let cell phones see through walls
04/27/2012

Laser-based 3D nozzle quality test from Fraunhofer ILT improves laser material deposition
04/26/2012

FIBER LASERS: Fiber lasers: The state of the art
04/01/2012

DIODE-PUMPED SOLID-STATE LASERS: Laser dazzlers are deployed
03/01/2012

OPTICAL DATA STORAGE: Holographic data storage uses volumetric crystal media
02/07/2012

Sandia's laser-guided bullet prototype can hit small targets a mile away
02/02/2012

FIBER OPTIC COMPONENTS & SYSTEMS

Open Photonics facilitates R&D-to-commercialization process

Discovery Semiconductors optoelectronic converter has photodiode current monitor

- Materials & Substrates
- Products & Services

Click here to have your products listed in the Laser Focus World Buyers Guide.

TOPIC INDEX

View Laser Focus World articles by topic, A-Z

VIDEO LIBRARY

View the Laser Focus World video library

ARTICLE ARCHIVE

View Laser Focus World past articles now.

TOPIC CENTERS

Spectroscopy - **NEW TOPIC**

Detectors and Imaging

Fiber Optic Components & Systems

Lasers & Sources

Optical Components & Systems

Positioning, Support & Accessories

Photonics Education

Photonics Business

Science and Research

Software

Test & Measurement

3D holograms assist battle preparation

More Detectors and Imaging

LASER & SOURCES

Microtech Instruments tunable OPO is pumped by a picosecond fiber laser

LASER ERS: Apodized combiner packs i e beams

Direct- ty expansion goal of TeraDi loan

Ultrafa plitude Systèmes available in IR, gre lengths

Open F tes R&D-to-commercialization proces

More Laser & Sources

OPTI ONENTS & SYSTEMS

LASER ERS: Apodized combiner packs i e beams

Leap Technologies intros high-volume lens array capability

Open Photonics facilitates R&D-to-commercialization process

IBS deposition process coats half-meter optics

Carnegie Mellon and Anglo American PLC sign agreement to develop mining robots

More Optical Components & Systems

SOFTWARE

Open Photonics facilitates R&D-to-commercialization process

Spectroscopy software from Avantes features multimonitor setups

3D holograms assist battle preparation

Enter the CLEO/LFW Innovation Awards program and win an iPad3

Head-mounted cameras help robots "socialize"

More Software

TEST & MEASUREMENT

Microtech Instruments tunable OPO is pumped by a picosecond fiber laser

Graphene plasmonics device detects single molecules of drugs

Pyroelectric sensors from Ophir Photonics Group have repetition rates up to 250 Hz

Open Photonics facilitates R&D-to-commercialization process

Spectroscopy software from Avantes features multimonitor setups

More Test & Measurement

Vytran expands optical fiber splicing service with German support center

Laser Marketplace Seminar a month away--register now!

More Fiber Optic Components & Systems

POSITIONING, SUPPORT & ACCESSORIES

Open Photonics facilitates R&D-to-commercialization process

Discovery Semiconductors optoelectronic converter has photodiode current monitor

More-durable metallized sapphire endoscopic windows developed by Guild Optics

Vytran expands optical fiber splicing service with German support center

Laser Marketplace Seminar a month away--register now!

More Positioning, Support & Accessories

SCIENCE AND RESEARCH

Open Photonics facilitates R&D-to-commercialization process

IRCM technology advance born from Northrop Grumman/Pranalytica partnership

More-durable metallized sapphire endoscopic windows developed by Guild Optics

Pyroelectric thin films examined for IR sensing

Coating that mimics firefly scales makes LEDs more efficient

More Science and Research

SPECTROSCOPY

Microtech Instruments tunable OPO is pumped by a picosecond fiber laser

Open Photonics facilitates R&D-to-commercialization process

Spectroscopy software from Avantes features multimonitor setups

Dense BN is durable terahertz optical material

Achromatic lenses from AdlOptica address chromatic shift

More Spectroscopy

Biophotonics
Detectors and Imaging
Fiber Optics Components & Systems
Lasers & Sources
Optical Components & Systems
Positic
Acces
Scienc
Softwa
Test &

Laser Focus World World Magazine
Contact Us
About Us
Advertising
Subscribe
Login
Register
RSS

Webcasts
White papers
Editorial Digests
Video
Blogs
Events
PennWell Events
PennWell Websites
OptoIQ
Strategies Unlimited

Laser Focus World
Laser Focus World Japan
Laser Focus World China
Industrial Laser Solutions
Industrial Laser Solutions China
Industrial Laser Solutions Japan
BioOtpics World Magazine

Twitter
Facebook
Linked In

4
Facebook
1
Twitter
1
LinkedIn

6
Share