


OPN

Optics &
Photonics
News

A thermal image of a Gulfstream helicopter, showing the rotor blades and the fuselage. The image is rendered in a color scale from blue (cooler) to red and yellow (warmer). The words "GULFSTREAM" are visible on the side of the fuselage.

Seeing in the Dark: Defense Applications of IR Imaging

Integrated Chip Scale
Plasmonic Biosensors

Insect Eyes Inspire
Improved Solar Cells



Infrared technology makes it possible to image military threats through smoke and fog or behind foliage in the darkest night.

COVER and this page courtesy of FLIR Advanced Thermal Solutions.

[COVER STORY]

26 Seeing in the Dark: Defense Applications of IR imaging

Infrared imaging is used in many defense applications to enable high-resolution vision and identification in near and total darkness. Thanks to recent advances, optics companies and government labs are improving low-light-level vision, identification capability, power conservation and cost.

Valerie C. Coffey

32 Towards an Integrated Chip-Scale Plasmonic Biosensor

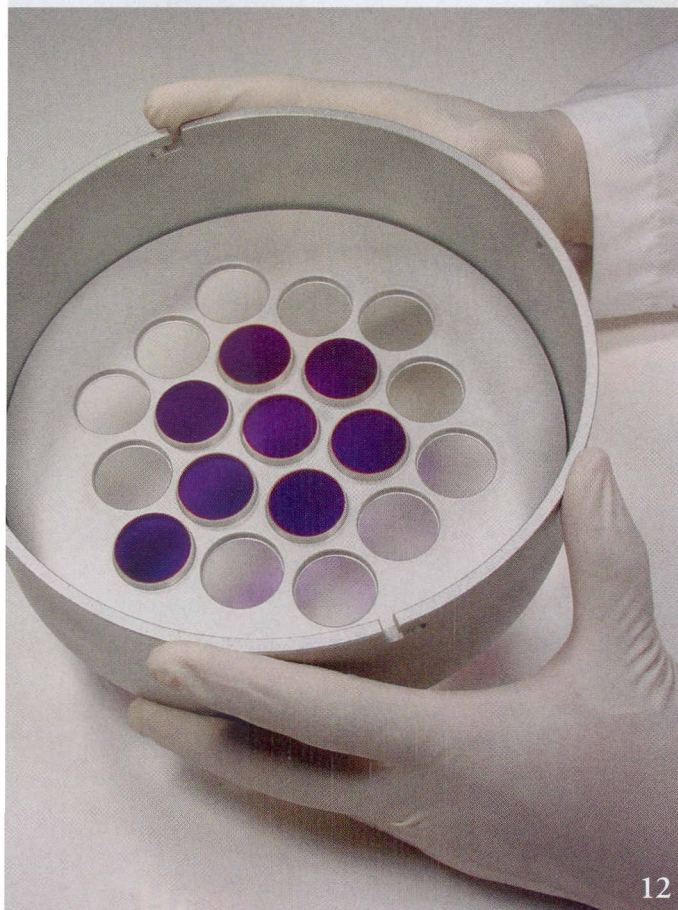
Biosensing allows researchers to detect tiny amounts of harmful chemicals before they become major threats. These researchers are using advanced optical technologies to develop the biosensor of the future—a plasmonic-based chip-scale device that will allow for compact, inexpensive, ubiquitous and sensitive detection.

Ryan M. Gelfand, Dibyendu Dey, John Kohoutek, Alireza Bonakdar, Soojung Claire Hur, Dino Di Carlo and Hooman Mohseni

38 Insect Eyes Inspire Improved Solar Cells

Taking a cue from nature, these researchers looked to the compound eyes of insects as a model for developing their unique approach to harvesting sunlight.

Francesco Chiadini, Vincenzo Fiumara, Antonio Scaglione, Drew P. Pulsifer, Raúl J. Martín-Palma, Carlo G. Pantano and Akhlesh Lakhtakia



12

Optonetic

6 Scatterings

Tiny room-temperature plasmon lasers; a glass that's tougher than steel; electron microscopes get twisty; electromagnetic liquid pistons could aid in adaptive imaging.

Patricia Daukantas and Yvonne Carts-Powell

10 Career Focus

Resumes and CVs: A problem-solving approach for scientists.

Alaina G. Levine

12 Optics Innovations

Optonetic: A niche in custom coatings.

Mark Oberdzinski

14 Policy Matters

Science in the United Kingdom: Sailing in stormy seas.

Tim Hayes

16 Light Touch

An eye toward multispectral imaging.

H.D. Wolpert

20 Conversations in Optics

OPN talks with Donald Keck CLEO: 2011 plenary session keynote speaker.

22 The History of OSA

Presidents of the mid-1960s.

John N. Howard

46 The OSA Foundation

Thank you 2010 contributors.

52 In Memory

Remembering OSA fellows emeritus Hiroshi Takuma and John Lott Brown.



16

Thinkstock

4 President's Message

5 Letters

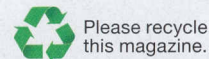
44 OSA Today

50 Book Reviews

54 Product Profiles

55 Marketplace

56 After Image



OPN *Optics & Photonics News* (ISSN 1047-6938), Vol. 22, No. 4 © 2011, Optical Society of America. OPN is published monthly except bimonthly July-August by the Optical Society of America, 2010 Massachusetts Ave., N.W., Washington, D.C. 20036; 202.223.8130; Fax 202.223.1096; Email opn@osa.org; Web www.osa-opn.org. OPN was published as *Optics News* from 1975-1989. (CODEN OPPHEL; GST #133618991; IPM #0895431). OSA is a not-for-profit society founded in 1916. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by the Optical Society of America, provided that the base fee of \$6 per copy is paid directly to the Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970-5575. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Report Service is 0098-907X/99 \$6. Permission is granted to quote excerpts from articles in this publication in scientific works with the customary acknowledgment of the name of the publication, page, year and name of the Society. Reproduction of figures and tables is likewise permitted in other articles and books provided that the same information is printed with them and notification is given to the Optical Society of America. 2011 nonmember and library subscription rates (domestic): \$100/year. Membership in the Optical Society of America includes \$7 from membership dues to be applied to a member subscription. Periodicals Postage paid at Washington, DC, and additional mailing offices. POSTMASTER: Send address changes to OPN *Optics & Photonics News*, 2010 Massachusetts Ave., N.W., Washington, D.C. 20036. Subscriptions, missing copies, change of address: Optical Society of America, Subscription Fulfillment Services, 2010 Massachusetts Ave., N.W., Washington, D.C. 20036; 800.766.4672. Back numbers, single issue, and foreign rates on request. Printed in the United States. OSA is a registered trademark of the Optical Society of America. ©2011. The content and opinions expressed in feature articles and departments in *Optics & Photonics News* and its occasional supplement, *OPN Trends*, are those of the authors and guest editors and do not necessarily reflect those of OPN or the Optical Society of America.

