

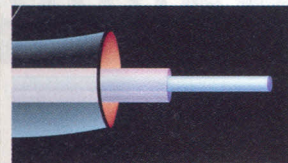
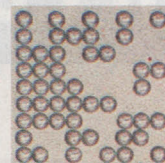
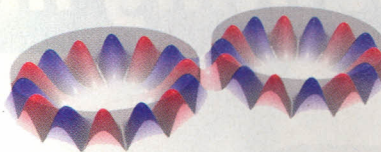
All-Fiber Probes

New Promise for Medical Imaging Applications

**Aspheres Deal with
Bigger Deviations**

**Electronics Augments
Modern Process Control
Spectroscopy**

www.Photonics.com



NEWS & ANALYSIS 20 | TECH NEWS

Photonics Spectra editors curate the most significant photonics research and technology headlines of the month – and take you deeper inside the news. Featured stories include:

- Single nanomaterial yields a laser rainbow
- Coupled lasers cancel each other out
- Solar cell-like implant stimulates optic nerve

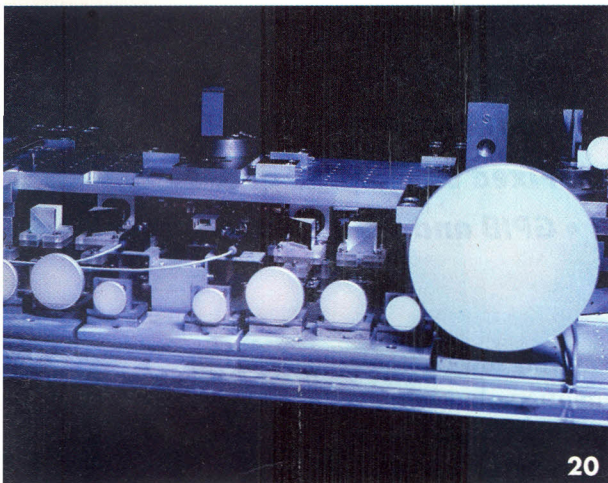
34 | FASTTRACK

Business and Markets

- Software gives photonics designers more power
- LME 2012 expands educational offerings

41 | GREENLIGHT

LED-like solar cell absorbs, emits light



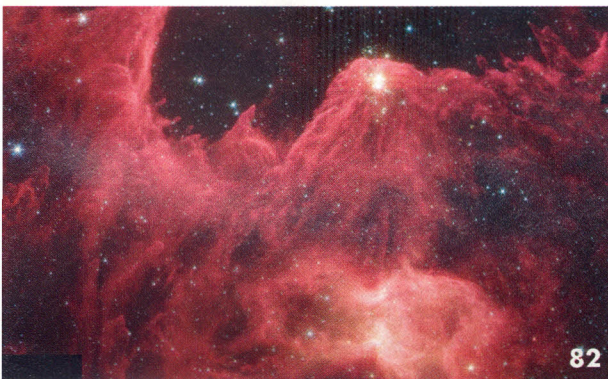
20

COLUMNS 10 | EDITORIAL

12 | LETTERS

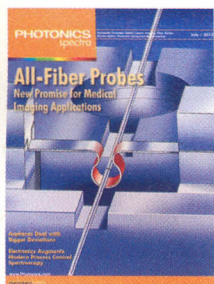
82 | PEREGRINATIONS

Uncooled IR camera reveals mysteries of space



82

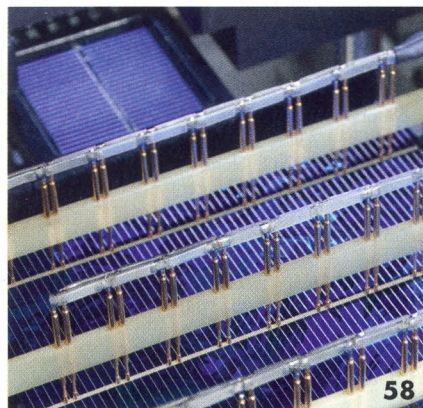
DEPARTMENTS 70 | BRIGHT IDEAS 79 | HAPPENINGS 81 | ADVERTISER INDEX



THE COVER

Jean-Michel Pelaprat and Dr. Baishi Wang of Vytran LLC discuss optical fiber probes for medical imaging applications, beginning on p. 42. A schematic of the filament fusion process is illustrated. Design by Senior Art Director Lisa N. Comstock.

FEATURES



42 | ALL-FIBER PROBES HOLD PROMISE FOR MEDICAL IMAGING APPLICATIONS

by Jean-Michel Pelaprat and Dr. Baishi Wang, Vytran LLC

Designs made possible by filament fusion technology have found applications in medical imaging such as 1- and 2-D optical coherence tomography.

46 | NANOSCALE BIOMATERIALS REQUIRE CLOSE OBSERVATION

by Lynn Savage, Features Editor

Deep-imaging microscopy could advance the use of polyurethane-based "nanohybrids" in replacement bones and blood vessels.

52 | DPSS LASERS GIVE MEDICAL DEVICE MANUFACTURING AN EDGE

by Jim Bovatsek, Jürgen Niederhofer and Dr. Rajesh S. Patel, Spectra-Physics

As medical devices continue to shrink, these solid-state lasers offer a versatile alternative to CO₂ and excimer.

55 | BEAM PROFILING HELPS MAKE MEDICAL DEVICES BETTER

by John McCauley, Ophir-Spiricon

The range of information provided by laser measurement products ensures the consistency and precision of the machine or process.

58 | ELECTRONICS AUGMENTS MODERN PROCESS CONTROL SPECTROSCOPY

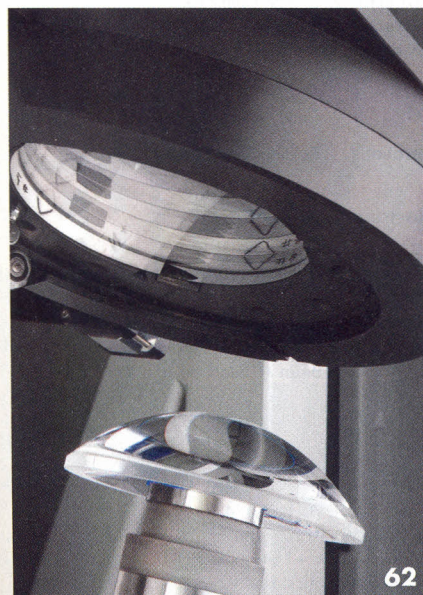
by Gert Noll, Tec5USA Inc., and Mathias Holzapfel, Tec5 AG

In process control, the detector array and readout electronics are key; ideally, these are combined with a large signal-to-noise ratio and high dynamic range.

62 | ASPHERES DEAL WITH BIGGER DEVIATIONS

by Hank Hogan, Contributing Editor

As aspheres with deviations up to 800 μm have become common and manufacturing runs have become smaller, metrology tools and techniques have evolved to keep up.



PHOTONICS SPECTRA ISSN-0731-1230, (USPS 448870) IS PUBLISHED MONTHLY BY Laurin Publishing Co. Inc., Berkshire Common, PO Box 4949, Pittsfield, MA 01202, +1 (413) 499-0514; fax: +1 (413) 442-3180; e-mail: photonics@photonics.com. TITLE reg. in US Library of Congress. Copyright © 2012 by Laurin Publishing Co. Inc. All rights reserved. Copies of Photonics Spectra on microfilm are available from University Microfilm, 300 North Zeeb Road, Ann Arbor, MI 48103. Photonics Spectra articles are indexed in the Engineering Index. **POSTMASTER:** Send form 3579 to Photonics Spectra, Berkshire Common, PO Box 4949, Pittsfield, MA 01202. Periodicals postage paid at Pittsfield, MA, and at additional mailing offices. **CIRCULATION POLICY:** Photonics Spectra is distributed without charge to qualified scientists, engineers, technicians, and management personnel. Eligibility requests must be returned with your business card or organization's letterhead. Rates for others as follows: \$122 per year, prepaid. Overseas postage: \$28 surface mail, \$108 airmail per year. Inquire for multiyear subscription rates. Publisher reserves the right to refuse nonqualified subscriptions. **ARTICLES FOR PUBLICATION:** Scientists, engineers, educators, technical executives and technical writers are invited to contribute articles on the optical, laser, fiber optic, electro-optical, imaging, optoelectronics and related fields. Communications regarding the editorial content of Photonics Spectra should be addressed to the managing editor. Contributed statements and opinions expressed in Photonics Spectra are those of the contributors – the publisher assumes no responsibility for them.