

Worldwide Coverage: Optics, Lasers, Imaging, Fiber Optics, Electro-Optics, Photonic Component Manufacturing

# PHOTONICS

SPECTRA®

A Laurin Publication

January 2003

**The  
Photonics  
Circle of  
Excellence  
Awards**  
Honoring the  
Year's Most  
Innovative Products

the  
PHOTONICS  
CIRCLE of  
EXCELLENCE  
AWARD

2002

the  
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AWARD

2002

**SPECIAL REPORT:**

THE

**2003  
GLOBAL  
TECHNOLOGY  
FORECAST**

PLUS

**MINI-MAGAZINE**  
**Imaging: Scientific & Industrial**

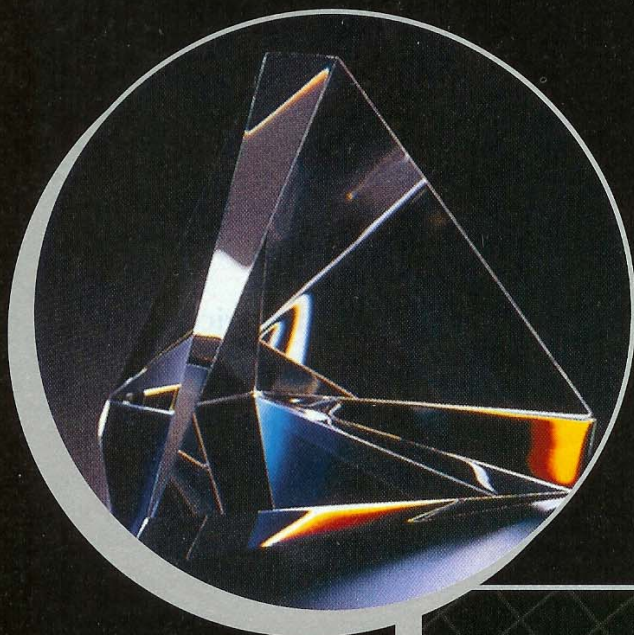
*49 Years*



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**2002 PHOTONICS AWARDS**

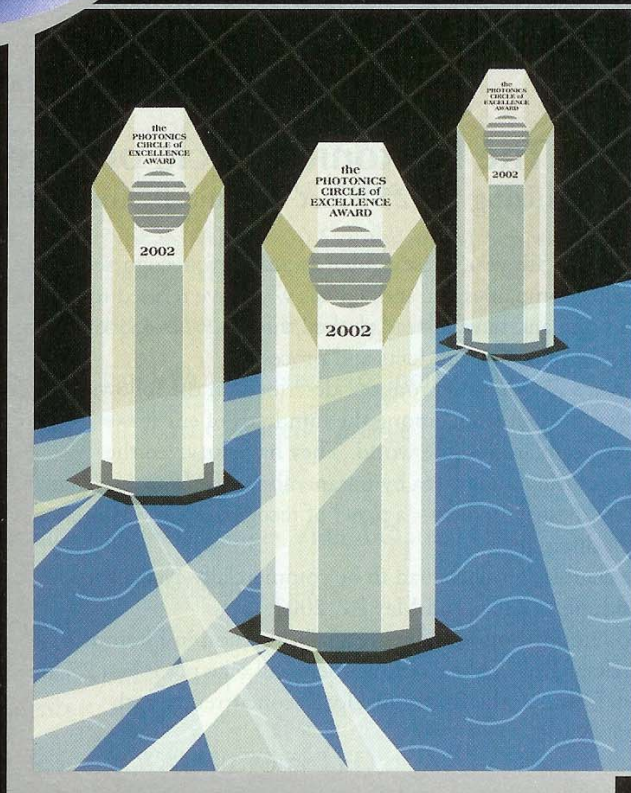


**Distinction  
in Photonics**

**Honoring Individual  
Achievement**

**Photonics  
Circle of  
Excellence**

**Recognizing  
the Industry's  
Best New Products**

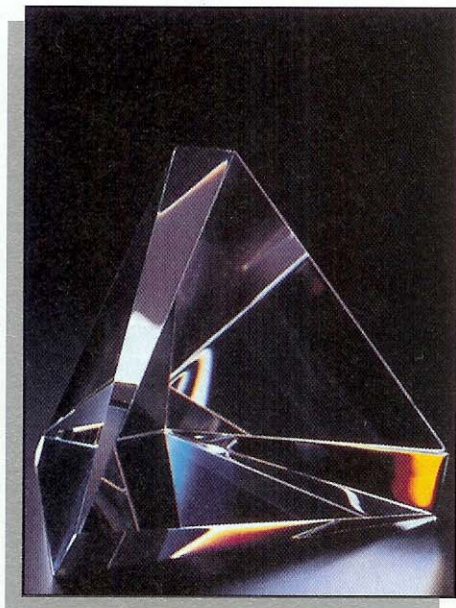




# LAURIN PUBLISHING

## 2002 PHOTONICS AWARDS

### The Distinction in Photonics Award: Honoring Individual Achievement



The Distinction in Photonics Award honors those individuals whose dedicated service over the years has contributed to the growth and prosperity of the photonics industry.

The publishers and editors at Laurin Publishing are pleased to present the 2002 Distinction in Photonics Award to:

**Michael Fitzpatrick**

and

**Hank Gauthier**

who, through tireless devotion to their companies, employees and industry associations, have furthered the cause of the photonics industry.

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### The Photonics Circle of Excellence Awards: Recognizing the 25 Most Technically Innovative New Products of the Year

Now in their 15th year, these annual awards have recognized the enterprising companies and individuals who have refused to accept the status quo and have instead pushed the limits of technology to develop new photonic products and processes.

This year's 25 winning products, described on the following pages, were chosen from among the hundreds of entries submitted from around the world. They have survived the toughest scrutiny: judgment by the members of *Photonics Spectra's* Editorial Advisory Board — a panel of recognized experts in a variety of disciplines.

To be eligible, products had to be commercially available between June 1, 2001, and May 31, 2002.

The ceremony honoring this year's Distinction in Photonics and Circle of Excellence award winners will take place Jan. 27 in San Jose, Calif., at the Fairmont Hotel, concurrently with Photonics West.



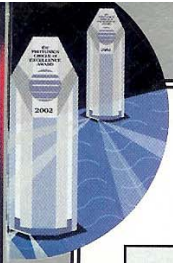


# The 2002 Circle of Excellence Award Winners

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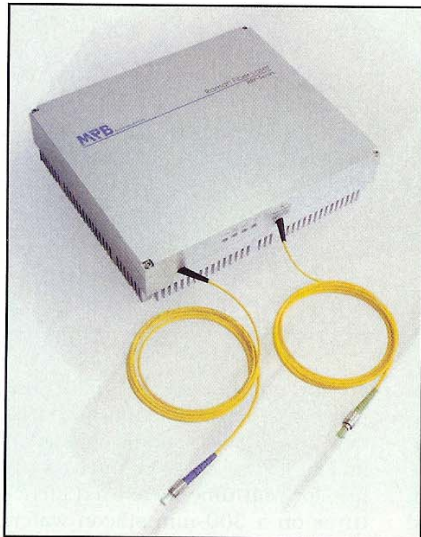
Agilent Technologies Inc. Lightwave Div.	86107A Precision Timebase Reference Module
Alcatel Optronics	1910 TWV Multiplexer
Calient Networks	DiamondWave Photonic Switching System
Coherent Inc.	Chameleon Laser
Crystal Fibre A/S	Nonlinear Photonic Crystal Fiber
Eastman Kodak Co. Image Sensor Solutions	KAF-3200ME Image Sensor
Farfield Sensors Ltd.	AnaLight Bio200 Scientific Sensor
FLIR Systems	ThermaCam E2 Infrared Camera
Given Imaging Ltd.	M2A Video Capsule
Honeywell	Stabilaze VCSEL Arrays
IMRA America Inc.	GX Pulsar Laser Source
Lightbit Corp.	BandXChange Optical Processor
MPB Communications Inc.	Super Raman Fibre Laser
OFS Specialty Photonics Div.	RightWave Tunable Dispersion Compensator
Point Source	iFlex-2000 Violet Laser System
Positive Light Inc.	Indigo-DUV Laser Source
Renishaw plc	NSOM/AFM-100 Confocal/RM Series Raman Microscope
Roper Scientific Inc.	Photometrics Cascade Digital Camera
Sabeus Photonics Inc.	Cold Writing Sensor Technology
Santur Corp.	TL1010-C Widely Tunable Laser Source
Spectra-Physics	Hippo Industrial Laser
Sumita Optical Glass Inc.	K-PG325 Super Vidron Optical Glass
3M Film and Light Management	UV Reflection Filters
3M Optical Components	Pulse Compressor
Toshiba America Electronic Components Inc.	TLWA1100 White LED





## MPB Communications Inc.

### • Super Raman Fiber Laser •



The Super Raman Fiber Laser from Montreal-based MPB Communications Inc. is a pump

source that provides distributed Raman amplification in transmission spans of telecommunications systems via third-order cascaded Raman pumping. Third-order cascaded Raman amplification of C-band signals requires launching high power at 1276 nm, the third-order pump wavelength, and low seed powers at about 1356 and 1455 nm, the intermediate and final pump wavelengths.

The 1276-nm power produces high Raman gain for the 1356-nm seed radiation, leading to the generation of high power at 1356 nm. Similarly, the 1455-nm seed power is amplified by the Raman gain produced by the 1356-nm power. With each cascade, the peak power at the converted wave-

length occurs farther out in the span; thus, cascaded pumping improves the amplifier noise figure.

At the heart of each Super Raman module is a Raman fiber laser that consists of an Yb-doped double-clad fiber laser and a phosphorous-doped-fiber Raman converter. The large phosphorous Raman shift allows the 1093-nm Yb laser output to be converted to the desired third-order Raman pump wavelength in a single conversion.

To provide seed powers at the intermediate and final wavelengths, high-reflectivity fiber gratings at 1356 and 1455 nm carry the 1276-nm pump power out of the span. The transmission fiber acts as a double-pass amplifier for the spontaneous Raman emission at each wavelength, with the feedback at the far end provided by a distributed Rayleigh scattering mirror.

## OFS

### Specialty Photonics Div.

#### • RightWave Tunable Dispersion Compensator •

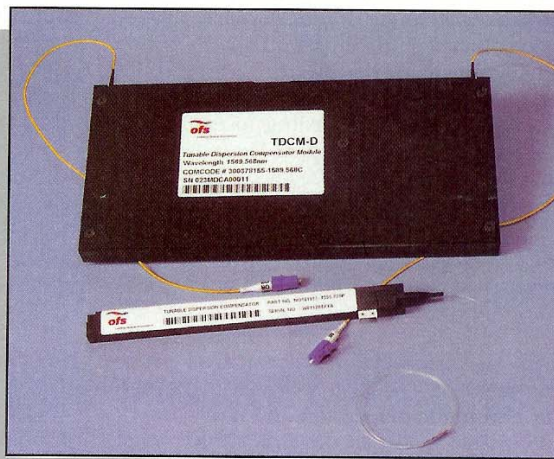
The RightWave tunable dispersion-compensating module enables transmission systems to operate at ultrahigh data rates of 40 Gb/s. Its manufacturer, OFS, Specialty Photonics Div. of Somerset, N.J., says that the module eliminates the adverse effects of the time-dependent temporal broadening of optical signals caused by chromatic dispersion.

A specially designed fiber Bragg diffraction grating, coupled to a tapered thin-film microheater, comes in an isothermal package that protects it from air currents, changes in ambient temperature and other effects that could alter the thermal gradient established by the microheater.

RightWave's design enables a wide dispersion tuning range in a compact, low-loss, low-power, all-fiber device. Its primary use is to

compensate for variations in the chromatic dispersion of optical links, which would otherwise limit the length of the link and/or the transmission rate. The device also may be used in nonlinear fiber devices as a temporal-pulse-compressing element.

RightWave has no moving parts, and its low thermal mass makes for efficient operation. The high surface-area-to-volume ratio of the microheater leads to a high rate of passive cool-



ing, so that the tuning speed is sufficient to compensate for fluctuations in network dispersion.