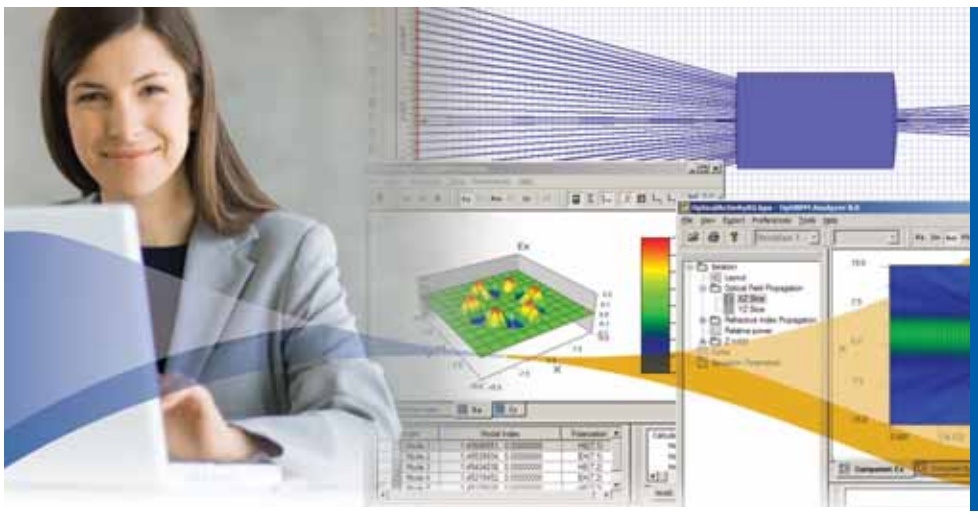
2007 EDITION

PHOTONIC DESIGN SIMULATION SOFTWARE

OptiNews

A PUBLICATION OF OPTIWAVE SYSTEMS INC.



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## #01 HUAWEI SELECTS OPTIWAVE

**Huawei Technologies** the leading provider of next generation telecommunications networks has competitively selected Optiwave's optical communication system design suite, OptiSystem, to meet their optical link design operations.

## #02 NEXT GENERATION PHOTONIC DESIGN SOFTWARE

***Optiwave now delivers the power of 64-bit computing to your desktop with next generation applications that address a massive amount of memory, without compromising the performance of your hardware.***

The 'true 64-bit' edition of Optiwave software products are 64-bit applications written specifically for next generation operating systems. The newly optimized code structure results in improved computing performance and efficient memory utilization. Users are now capable of running large scale 'real world' simulations, without any memory restrictions limited to 32-bit applications.

## OPTIWAVE SOFTWARE PRODUCTS

**OptiSystem**
Optical Communication System and Amplifier Design Suite

**OptiFDTD**
Finite-Difference Time-Domain Simulation Design

**OptiFDTD MAX**
Next Generation FDTD Design Workstation

**OptiBPM**
Waveguide Optics Design Software

**OptiGrating**
Optical Grating Design Software

**OptiFiber**
Optical Fiber Design Software

**OptiPerformer**
Freeware – Optical System Design Software

## #03 BTI PHOTONIC SYSTEMS SELECTS OPTISYSTEM

**BTI Photonic Systems Inc.** has purchased OptiSystem, Optiwave's optical communication system design suite, to meet their optical link design operations.

BTI utilizes OptiSystem simulation software for research in optical transmission link designs, ROADM capabilities and advanced research in optical signal regeneration and amplification. "OptiSystem's capabilities enhance our design process allowing us to provide a rapid delivery of enhanced capabilities on our microWDM platform," said Dr. Ahmed Atieh, Technical Lead Engineer at BTI. "The technical support from the Optiwave team meets our expectations in achieving the desired simulation requirements."

With a focus on making broadband telecommunications networks more flexible, easier to operate and profitable, BTI has developed its microWDM platform. The BTI microWDM portfolio is comprised of the 2060, 1030, 1020 platforms, all engineered to run on one common operating system for seamless upgrades. Plug-in modules add key optical functionality including amplification, dispersion compensation, multiplexing, and wavelength conversion.

"OptiSystem is a real-world simulation application which has the flexibility to meet our customer's specific design needs," said Jan Jakubczyk, President and CEO of Optiwave Systems. "As robust new technologies are introduced to the marketplace, software design is a crucial component to meet accelerated product development requirements."

Since 1992, Optiwave photonic design tools have been in the marketplace for over a decade, establishing itself as the key worldwide provider of simulation design products.

Download your free evaluation License at:
**www.optiwave.com**

## #04 SIMULATION AND VALIDATION – COMPLEX OPTICAL NETWORKS

**OptiSystem**
Optical Communication System
and Amplifier Design Suite

The development of modern photonic systems and all-optical networks can be complex in nature, particularly with recent innovations in optical systems technology. In an effort to increase efficiencies through the design and validation of development concepts, Optiwave has created OptiSystem, a comprehensive optical communication system design and verification suite.

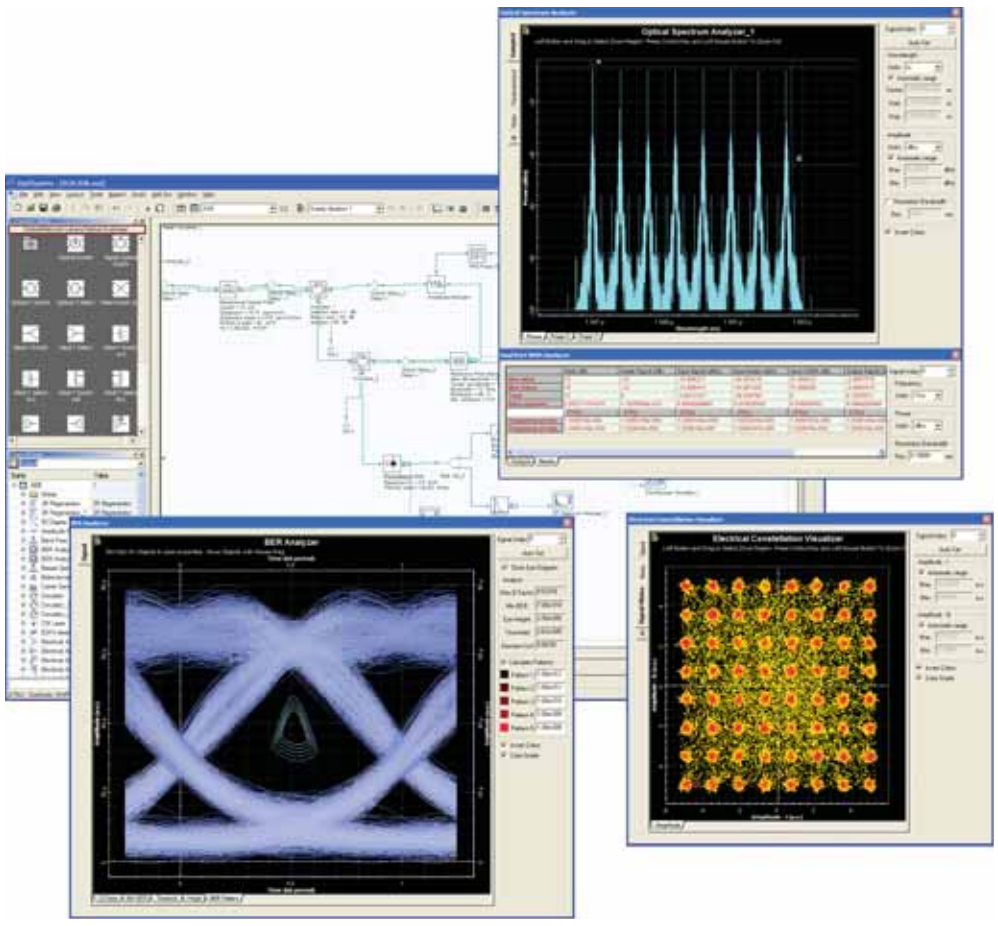
First released in 2001, OptiSystem has matured into a robust simulation environment boasting hundreds of components and powerful scripting capabilities. Winning customers such as military contract manufacturers **Northrop Grumman** and **General Dynamics** validates OptiSystem as the key choice for senior research development organizations.

Dr. Jackson Klein, Director of Optical Systems at Optiwave, has been working with the design and development of computer-aided design and analysis tools for optical communication systems for more than a decade. "We understand the needs of researchers in the field of photonic system design, and OptiSystem provides one complete design, simulation, and optimization environment," notes Dr. Klein. "This is the only product of its kind which has an extreme amount of flexibility to meet all design team requirements, supporting the majority of system concepts in one integrated design environment."

OptiSystem is an innovative, rapidly evolving, and powerful software design tool that enables users to plan, test, and simulate almost every type of optical link in the physical layer of a broad spectrum of optical networks including FTTx, PON, GPON, EPON, and FSO. Enhancements in OptiSystem provide optical engineers with more options for robust simulations and ultimately empower end users with a wider range of flexible benefits.

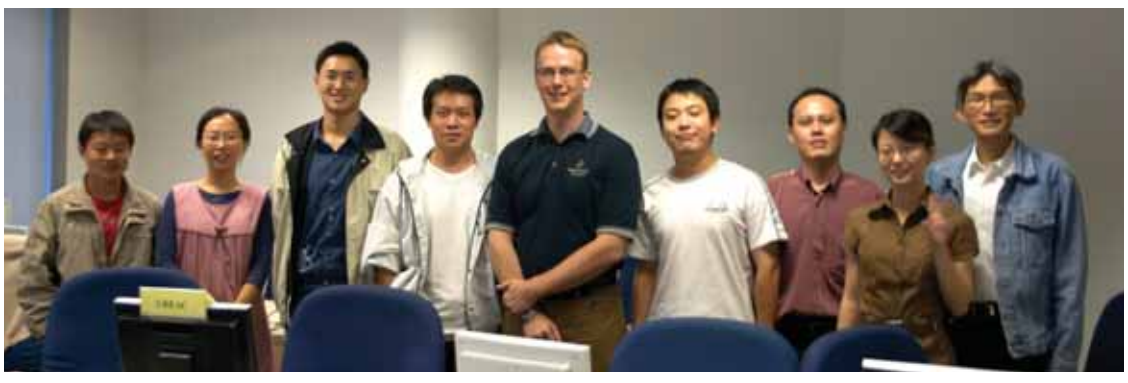
One of the exciting new features in the latest release of OptiSystem is an advanced photonic all-parameter analyzer. The photonic all-parameter analyzer measures polarization mode dispersion (PMD) and records multiple traces simultaneously. This robust new feature can measure insertion loss (IL), differential group delay (DGD), polarization chromatic dispersion (PDC), depolarization rate, dispersion, dispersion slope, and group delay (GD).

In addition, OptiSystem 6.0 features S-Parameter Extraction capabilities allowing for electronic component or subsystem characterization. The signal characteristics from an optical transmitter input and receiver output can be extracted and exported into an industry standard touchstone format for s-parameters, benefiting EDA tools that offer integrated S-Parameter support, and shortening the design cycle time.



*OptiSystem 6.0 Enhanced Visualization Tools*

## #05 OPTIWAVE IN SINGAPORE AND MALAYSIA



*Optiwave Instructor, Jason Taylor, meets with graduate students at Nanyang Technological University.*

Team members from Optiwave traveled to Singapore and Malaysia earlier in the year to meet with select customers using Optiwave software.

The first visit to **Nanyang Technological University** proved to be of great value to students and professors who have adopted the Optiwave for Educators Program for academic research and teaching. NTU is focused on technology innovation, and is one of the top five educational institutions in the world in engineering publication.

In addition to the visit at NTU, members from Optiwave visited the **Data Storage Institute (DSI)** in Singapore**.** DSI was established in April 1996 through the expansion of the **National University of Singapore (NUS)**. Members from DSI are using Optiwave products to meet their current research and development needs in association with industry partners.

Once in Malaysia, the Optiwave team headed to **Telecom Malaysia,** who has acquired licenses of OptiBPM to meet their optical waveguide design research operations. A three day onsite training session was provided and all participants found great value in extensive program.

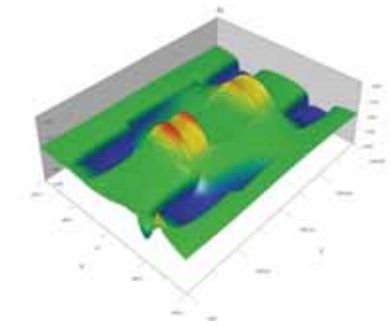
We thank Optiwave distribution channels in Singapore, Goldlite Engineering, and Malaysia, Kumpulan Abex, for organizing the Southeast Asia tour.

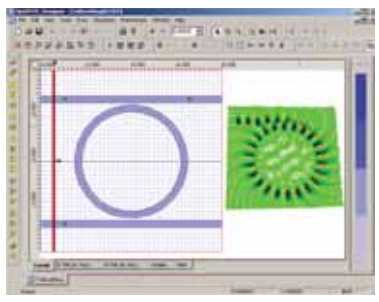


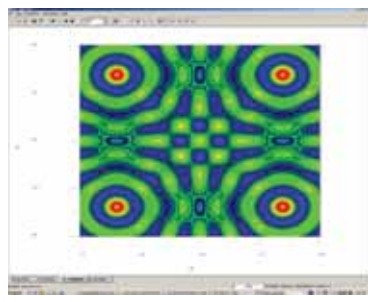
*Nanyang Technological University Campus*

## #07 FDTD TRENDS – INNOVATION THROUGH SIMULATION

**OPTI*FDTD***
Finite-Difference Time-Domain
Simulation Design Suite







The FDTD (Finite-DifferenceTime-Domain) modeling method has gained popularity among photonic researchers as the numerical solver of choice solving both electric and magnetic fields in temporal and spatial domain using the full vector differential form of Maxwell's coupled curl equations.

Complementing the functionality of the FDTD numerical method is OptiFDTD, a powerful, highly integrated software application for computer-aided design and simulation of advanced passive and non-linear photonic components. Researchers can design 'real world' type simulations in one complete simulation environment.

OptiFDTD applications include: photonic integrated circuits, photonic band gap devices, optical micro-ring resonators, nano-layout, photonic surface plasmon, optical grating based layouts, diffractive micro-optics elements, nonlinear waveguides, specialized materials and electromagnetic phenomena.

One of the many votes of confidence in OptiFDTD comes from Dr. Peter Catrysse of **Stanford University** Department of Electrical Engineering. "We are using OptiFDTD to perform 2D and 3D simulations of CMOS image sensor pixels to evaluate their optical efficiency. OptiFDTD is a very versatile simulation tool and we are impressed with Optiwave's level of support and service."

Since its commercial availability in 2001, OptiFDTD has grown into a complete photonic design environment, including a number of advanced post-processing tools. "Its amazing to see how OptiFDTD has matured over the years," notes Dr. Jiazong Zhang, Product Manger. "Now that we have OptiFDTD available in a 'true 64-bit' environment, users are no longer limited by traditional memory barriers, allowing for large scale mesh simulations, effectively reaching 'real world' specifications."

**Included with OptiFDTD:**

An extensive material library: Lossless and lossy, isotropic/anisotropic, multiple resonance dispersive materials, Drude/Lorentz-Drude, Kerr effects, Raman effects, Enable noble metal and surface plasmon.

PWE Band Solver included at no additional charge.

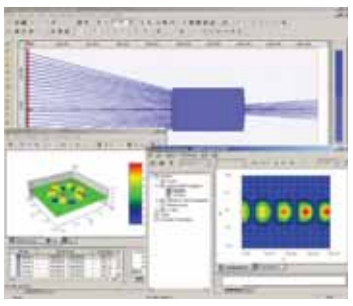
The following improvements have been added to the latest version of OptiFDTD: Total field and scattering field (TF/SF) excitation algorithm, designed to make a separation of total field and scattering field with input wave excited to one desired direction. Radar Cross Section (RCS) detection is feasible with this new TF/SF excitation.

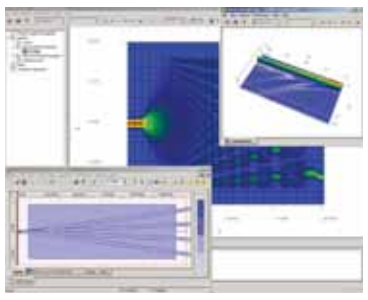
**Your design interest may include:**

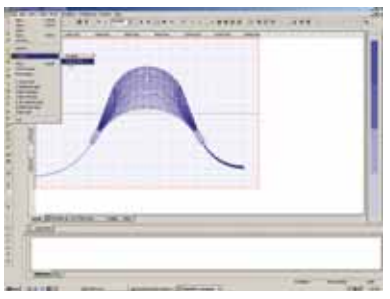
*Metallic Nanostructures, photonic band gap materials and devices, optical micro-ring filters and resonators, grating based waveguides structures, displays.*

## #06 OPTICAL WAVEGUIDE DESIGN USING OPTIBPM

**OPTI*BPM***
Waveguide Optics Design Software







The Beam Propagation Method (BPM) is widely used in numerical simulations of optical waveguides that vary in the propagation direction. For low to medium index contrast, the BPM method allows fast and accurate 2D and 3D simulations.

In 1992, Optiwave pioneered the first commercially available simulation design tool tailored for the design of complex optical waveguides, OptiBPM. Since its inception, OptiBPM has matured into a comprehensive design suite in use by leading research institutions and universities worldwide.

Based on the Beam Propagation Method (BPM) of simulating light passage through any waveguide medium, OptiBPM allows designers to observe computer-simulated light field distribution and examine the radiation and the guided field, simultaneously. The introduction of optimized fiber vector and LP mode solvers allow for more simulation flexibility and improved accuracy.

"OptiBPM is easy to use, flexible, powerful and fast," says Carl Tuttle from **Lockheed Martin.** "Additionally, the support we have received from Optiwave has been uniformly excellent." The latest edition of OptiBPM includes new optimization algorithms which can help increase the accuracy of complex simulations. Optimization engines include the Golden Search for one dimension, Simplex and Direction Set methods for multidimensional searches.

**The Power of OptiBPM:**

- Ready to accept any refractive index distribution as input. Once this input is done, modes can be found, and BPM based propagation simulations can be performed.
- Can simulate higher order Padé approximants in 3D, such as Padé (4,4) in 3D full vector anisotropic BPM. An exclusive feature in OptiBPM.
- Flexible user environment, with the capability to create long and wide planar lightwave circuits.
- Full parameterization of waveguide shapes, including: Elliptical, Parabolic, Taper, Ring and S-Bend Cosine Taper.

**Your design interest may include:**

*Channel waveguides, rib or ridge waveguides, buried waveguides or waveguides from a diffused process. Facilitates the design of splitters, combiners, couplers, modulators and multiplexers.*

## #08 OPTIWAVE IN IRAQ – CREATION OF A PHOTONICS LAB



*From Right, Dr. Sawsan Majid with Dr. Peri Khan and student Banaz using OptiSystem at Sulaimania University in Iraq.*

No organization better reflects its international blend of employees than Optiwave. From Brazil to Poland, Optiwave team members are a united group ready to take on the next challenge. But for one employee, the challenges grew larger than she could have ever imagined.

Dr. Sawsan Majid worked as a valued senior support engineer at Optiwave for a number of years. That life changed in 2001 when the war in her native country, Iraq, took precedence. Although Sawsan had been living in Canada for twenty-five years, she felt a need to return to her war torn nation in an effort to help with the rebuilding efforts.

Without any idea of what was to be expected, Sawsan moved back to Iraq in 2003, and accepted an academic position at the Informatics Institute for post graduate studies in Baghdad. "I was asked to create a course on fiber optic systems with a specialty in communication networks," Sawsan notes. "I was impressed with the quality of graduate students as they had a real interest in the subject."

Sawsan contacted Optiwave in late 2005 to find out if simulation design tools could be made available to the students in an effort to help with their M.Sc thesis work. "We received an email from Sawsan in Iraq, and were amazed to learn about her teaching efforts and dedication to these students," remarks Richard Rambaran, Director of Sales and Marketing. "Here's someone that wants to give a quality level education to students, even if its in the middle of a war zone. We couldn't refuse her request to sponsor licenses to meet their needs."

With Optiwave software in place in Iraq, students were able to complete and publish their thesis work; resulting in sponsored research initiatives outside the country. Due to the recent escalation of violence in Baghdad, Sawsan relocated her work in the north of Iraq at Koya University, where she is currently supervising the creation of a modern photonics lab which will be supported by Optiwave. "I am convinced of the importance of having a photonics lab in Iraq. The world needs to see we are moving forward in a positive direction."

## UPCOMING TRADE SHOWS

**Photonics West 2007**
January 23-25
**Booth #718 (Main Hall)**
San Jose Convention Center,
San Jose, California,

**OFC NFOEC 2007**
March 27-29
**Booth #3132 (Hall B)**
Anaheim Convention Center,
Anaheim, California

**INTEROPTO 2007**
July 11-13
Makuhari Messe
Tokyo, Japan

**CIOE 2007**
September 06-09
Shenzhen Convention
and Exhibition Center
Shenzhen, China

**ECOC 2007**
September 16-20
Intercontinental Congress
Center (ICC)
Berlin, Germany

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(North America)

**Optiwave Systems Inc.**
7 Capella Court
Ottawa, ON, Canada
K2E 7X1

Tel. 613-224-4700
Toll Free. 866-576-6784
Fax: 1-613-224-4706
**www.optiwave.com**

**OPTIWAVE EUROPE**
www.optiwave.eu

**OPTIWAVE SINGAPORE**
sales@goldlite.com.sg

**OPTIWAVE MALAYSIA**
sales@Kabex.com.my

**OPTIWAVE JAPAN**
Cybernet Systems Co. Ltd.

Nissay Otowa Bldg. 2-15-6 Otsuka
Bunkyo-Ku, Tokyo 112-0012
Tel: +81 3 5978 2481
optsales@cybernet.co.jp
www.cybernet.co.jp/optiwave/

**OPTIWAVE INDIA**
Advanced Micronic Devices Limited

907, Kailash Building, 26 K.G.Marg
New Delhi - 110 001

Tel. 91-011-65901343
www.amdlsed.com/cae.html
delhi@amdlcorp.com

**OPTIWAVE CHINA**
Infotek Information Systems

Room F1, 10th Floor
No. 1800 Zhongshan Road (W.)
ZhaoFeng Universe Building,
Shanghai, China

www.infotek.com.cn

**OPTIWAVE TAIWAN**
Infotek Information Systems

6Fl.,, No. 112 ,Yi-An Rd.,
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