Michael Lebby, President OIDA, about the situation of the Photonics industry in the USA

The global optoelectronics industry (also referred to as the photonics industry) continues to penetrate many new applications each year, and is currently 'walking on egg-shells,' as the recession unwinds globally. Many in the optoelectronics industry based in the U.S. are speaking out for the first time, underscoring the needs for governmental support as sales soften in the many commercial sectors. Last year, OIDA's description of the industry in last years summary was, 'strong and steady,' but this year, the OIDA comments is, '2009 is the forbidden band-gap year.' The following observation is clear from the industry activity over this past year:

> ***At OIDA, we are now seeing optoelectronics penetrate many new and exciting products, even in tough economic times; unfortunately, the majority of manufacturing now occurs in Asia, and we are in the process of transferring R&D to Asia too. The efforts of four decades of research, development, and manufacturing in optoelectronics here in the U.S. is quickly disappearing, and industry, for the first time is beginning to sound alarm bells...***

Given that many new applications in optoelectronics are consumer based, the sheer volumes of these new opportunities are driving the field to new heights every year. The trend toward convergence of applications is progressing well with products that employ a number of optoelectronic devices that typically would include displays, light emitting diodes (LED), detectors, image sensors, and lasers. One of the big drivers for this convergence is the liquid crystal display (LCD), a key optoelectronics component, which can be now found in a number of consumer products ranging from mobile phones to televisions. It now seems that the LCD, long the front runner and driver to the display industry has found a new competitor – the organic LED (OLED). Even the Asian manufacturers that produce LCDs are betting on organic LED technology to drive the next generation of consumer products such as televisions, monitors, and notebook displays.

OIDA has summarized this years findings in a worldwide market overview of optoelectronics that is available to members. New in 2009 is a green photonics technology and marketing chapter. This is the first time green photonics has been analyzed down to the component level.

On a global market standpoint, in 2008, the optoelectronics-enabled and components market reached $745 billion in total revenue, a 5% increase from $709 billion in 2007. OIDA forecasts a slow and consistent growth over the next decade for the optoelectronics-enabled and components markets, with revenue expected to surpass $1.3 trillion by 2020. This is a 2009-2020 compound annual growth rate (CAGR) of 5.5%. The biggest driver for the growth of this market is LCD displays, which will enable a variety of consumer-based products, from TVs to mobile phones to digital assistants.

Within optoelectronics-enabled products, the growth drivers over the next decade will be solar, computing/processing, medical care, and consumer displays/TVs, projected to achieve a 2009-2020 CAGR of 10.8%, 5.3%, 12.3%, and 6.5%,

respectively. The forecast for their combined total revenue in 2020 exceeds $650 billion. In 2008, these three markets achieved revenue of $307 billion.

The yearly growth for optoelectronics-enabled products and systems in 2008 ranged from 1% to 9%, over 4X smaller than last years range. Growth was led by Defense (9.1%) and solar photovoltiac (5.3%). The two biggest revenue segments today are consumer display/TV and computing/processing. Segments that are expected to decline in 2009 include: consumer/display (1.1%), automotive (1.9%), medical care/welfare (4.3%), and communications (15.3%).

Key findings for optoelectronics this year:

1) **Flat panel display (FPD) revenue will grow to nearly $180 billion over the next decade, driven predominantly by a-Si thin-film transistor (TFT) liquid crystal displays (LCD) for consumer products such as TVs.**

2) **White high brightness light emitting diodes (HB LED) will fuel growth of the LED markets to surpass $11 billion by 2020. The market will be driven by solid-state (or photonic) lighting, vehicular, and signs/displays.**

3) **The laser market is forecast to grow steadily from slightly over $6 billion in 2008 to nearly $9 billion by the end of the next decade. The nondiode market is expected to approach the diode market by the end of the decade fueled by materials process, industrial, and medical applications.**

4) **The optical communications market achieved $21.9 billion in 2008 and is expected to grow to $36 billion by 2020, with a 2009-2020 CAGR of 4.8%. This growth is led by strong growth in optical networking equipment that evolves the network architecture to be more efficient through the use of dynamic optoelectronic components.**

5) **Optoelectronic transceivers are expected to grow quickly, from $1.8 billion in revenue in 2008 to over $4.7 billion in 2020. Key revenue drivers will be Ethernet/Fibre Channel 10 Gbps technology. Over the next decade, the emergence of 40 and 100 Gbps modules will offer new and exciting growth opportunities. The race to utilize photonic integrated circuits (PICs) will increase.**

6) **Solid-state lighting devices will grow to over 30% of the lighting market by 2020, thereby giving competition to the incumbent incandescent and fluorescent luminaires. The solid-state lighting market is forecast to grow to more than $7 billion over the next decade and be composed predominantly of HBLEDs. Organic light emitting diodes (OLED) are expected to penetrate this market slowly due to their high cost structure.**

Data for this year's summary was collected from OIDA member companies, non-member companies, market research company partners, and members of the International Optoelectronics Associations (IOA). OIDA is a non-profit member based association for companies that wish to do business in the field of optoelectronics and photonics in North America.