

# Research & Development: Building the Foundation for US Innovation and Growth

## Today's Investment, Tomorrow's Discovery

Federal investments in R&D are vital to ensuring our country's long-term economic prosperity and competitiveness. Work being done in laboratories today leads to the businesses, innovations and jobs of tomorrow. The optical industry in particular will be a leading source of high quality advanced manufacturing jobs for this country in the future, but research – whether conducted in the private sector, at a university, or in a federal lab – requires long-term predictability to produce results. Many technologies now central to daily life – including the Internet, GPS technology, fluorescent lights, lasers, and microchips – were initially funded by Federal research dollars. Imagine what essential future technologies we will be denied because of drastic R&D budget cuts today.

## Improving Our Quality of Life through Light

Based on the science of light, optics and photonics are specialized fields of physics and engineering. From computer displays to solar panels and ever-faster Internet connections, optics and photonics drives our nation's economic growth and improves lives. With the active support of federally funded research, the professional scientists and engineers who work in optics are among the most innovative workers in our economy, creating new products, businesses and, in some cases, entire new industries. The jobs their efforts create, especially in manufacturing, are key to America's long-term growth.

In the next few years, optics and photonics has the potential to:

- Save lives through the use of improved imaging technology which will provide earlier detection of debilitating diseases such as Alzheimer's and cancer, allowing more time to treat the disease and reduce its spread.
- Realize the full potential of solid-state lighting (LEDs), dramatically reducing demand for electricity and transforming how light is used.
- Play a key role in finding ways to make U.S. advanced manufacturing processes cheaper, faster and more efficient. This is critical given that 28 percent of high tech manufacturing jobs have been lost over the last decade.
- Provide a high-speed broadband connection to every home and business in the country. The U.S. currently lags behind other industrial countries in broadband deployment.

**We urge Congress to make R&D a national priority and support predictable, sustained investments.**

**Sustained federal support of scientific research at the Dept. of Energy Office of Science, the National Science Foundation (NSF), and the National Institute of Standards & Technology (NIST) is vital to lay the foundation that industry needs to innovate, produce & market the next generation of advanced technology products and services.**



Advancing the Science  
and Technology of Light