From: Gopalakrishnan, Ganesh [mailto:ganesh@oida.org]
Sent: Wednesday, September 14, 2011 8:41 AM
To: amtech
Subject: AMTech Comments

Dear Ms. Lambis & Dr. Walsh,

The Optoelectronics Industry Development Association (OIDA) in conjunction with the Florida Photonics Cluster (FPC) are pleased to respond to the AMTech RFI. Attached is our response. Please feel free to contact me if you need any additional information.

Sincerely,

Ganesh K. Gopalakrishnan Ph.D.
Executive Technical Director

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The Optoelectronics Industry Development Association (OIDA) in collaboration with the Florida Photonics Cluster (FPC) is pleased to respond to the AMTech RFI. OIDA is an industry-led consortium representing the optoelectronics industries, as well as universities and research laboratories engaged in optoelectronics research. OIDA board members include: Corning Inc., Ciena Corporation, Infinera Corporation, and Telcordia Technologies. The FPC is dedicated to enhancing the industry through effective collaboration by bringing together the knowledge, expertise, and service that each company or organization has to offer. FPC board members include: Gooch & Housego, Harris Corp., Jenoptik Optical Systems, Florida High Tech Corridor Council, and University of Central Florida Office of Research & Commercialization. Collectively OIDA and FPC perform the critical function of assisting our member companies by developing technology roadmaps and assessing application specific trends for the benefit of the optoelectronics industry. These activities foster national competitiveness and provide impetus to the development cutting edge products.

Photonics and Optoelectronics are elements of the technology of light generation, detection, and manipulation with wide ranging applications from industrial and defense to security and medicine[1]. Furthermore, these technologies are also paramount to our current information economy, as well as to future growth in all sectors. Photonics and Optoelectronics are key enabling technologies across all these applications. At the components and system level, the market enabled is estimated to be in excess $ 6.5 B annually.

Optoelectronics, for example, has enabled the information age by providing the much-needed connectivity to individuals and businesses alike. Today, optoelectronic technologies pervade every segment of our network infrastructure ranging from submarine and terrestrial backbone networks to metro and access networks. Devices such as: lasers, modulators, optical amplifiers, and receivers, as well as the optical fiber and a host of other active and passive components, perform critical functions in different segments our networks. The data capacity enabled by these technologies that power the optical network is staggering, ranging from multiple Terabits/second in the submarine and terrestrial backbone network to multiple Gigabits/second in the metro and access segments. Optoelectronic technologies enable our communications network infrastructure, and are thus vital to our information economy and critical to our national security.

Despite the critical role played by photonic and optoelectronic technologies, the collapse of the telecom bubble in the early part of this century as well as an uncertain economic environment has jolted all facets of the optoelectronics industry supply chain. Many companies struggled to survive while others failed and filed for bankruptcy. The ones that did survive were subject to severe pricing pressures.

By some estimates, close to 500,000 jobs were lost[2,3] when the telecom bubble collapsed. A vast majority of the jobs lost were in optoelectronic manufacturing, especially optoelectronic packaging and assembly. Although a majority of the design and chip level fabrication of optoelectronic circuits continue to be performed in the U.S., almost all of the labor intensive packaging and assembly operations for these technologies have been offshored. While the recent surge in high-bandwidth services has created

a healthy demand for optoelectronic technologies, packaging and assembly operations continue to offshored. Today, a vast majority of the optoelectronic components and systems that power our internet and telecom network infrastructure are manufactured overseas. Now, in addition to job loss, offshoring brings new concerns related to cyber-security.

It is our steadfast belief that the situation can be remedied by investing in advanced manufacturing technologies centered on the manufacture, packaging, and assembly of optoelectronic, optical, and photonic components, subsystems, and systems incorporating these elements. Such investment would obviate labor-intensive manual assembly techniques in favor of more elegant manufacturing technologies, thus providing the much needed impetus for companies to hire at home. In addition, there are tremendous opportunities to expand the use of optoelectronic, optical, and photonic technologies in all facets of manufacturing operations (machining, inspection, assembly, etc.). Thus far, technology improvements in manufacturing, packaging, and assembly have been merely evolutionary. Through AMTech, NIST has an opportunity to create a new paradigm in optoelectronic, optical, and photonic manufacturing, packaging, and assembly, one that produces a critical technology platform that leads to sustainable job development. Furthermore, such technologies will be indispensable to meeting the insatiable demand for future high-bandwidth services, to reducing costs and increasing quality of manufacturing operations, and to increasing US competitiveness in all aspects of manufacturing. These manufacturing technologies would also have applications in many other areas such as sensing, energy, medicine, and defense.

Finally, while many suppliers consider chip-level technologies and other aspects of optical and photonic technologies to be proprietary to secure a competitive advantage, there is much commonality when it comes to manufacturing, packaging, and assembly technologies and operations. Thus, a new wave of innovative technologies would equally benefit all optoelectronic, optical, and photonic suppliers alike, as well as their subsystem and system-level customers, and is ideally suited for consortia-driven innovation such as what is being proposed in AMTech. It would also engender a new wave of innovation and jobs creation across the entire spectrum of optoelectronic, optical, and photonics industries.

Attached are letters of support from Corning Inc., and Infinera Corporation, both OIDA members, as well as FPC members Northrop Grumman Corporation/Laser Systems, Harris Corporation, and Gooch & Housego. The letters reflect the companies' commitment to participate in AMTech and transition the technology should funds become available. These companies are pioneers in their respective areas with a strong history of innovation in optoelectronic technologies and manufacturing.

References:

1. http://www.floridaphotonicscluster.com/files/PhotonicsClusterStudy2009.pdf
2. http://www.cato.org/pubs/pas/pa533.pdf
3. Michael K. Powell, speech at the Goldman Sachs Communicopia XI Conference, New York, October 2, 2002, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-226929A1.pdf

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OIDA/FPC responses to NIST questions on AMTech RFI

1. Should AMTech consortia focus on developments within a single existing or prospective industry, or should its focus be on broader system developments that must be supplied by multiple industries?

   OIDA/FPC response: *A focus on single existing or prospective industries will be the most productive and efficient use of the consortia resources. Many industries are multi-disciplinary in their operation, so those that are multi-disciplinary like the optics/photonics industry will naturally develop a consortium that encompasses the appropriate range of companies, institutions, agencies, and non-profit organizations needed to meet the objectives of AMTech. An emphasis on "new and emerging industries" like optics/photonics will have the greatest impact on the US economy and the goals of the AMTech program.*

2. Who should be eligible to participate as a member of an AMTech consortium? For example, U.S. companies. i.e., large, medium, and/or small; institutions of higher education; Federal agencies; state, local, and tribal governments; and non-profit organizations?

   OIDA/FPC response: *All organizations should be eligible to participate in an AMTech consortium, but there should be no disadvantage if a proposing consortia does not include representatives from the full range of possibilities, i.e., large, medium, and/or small; institutions of higher education; Federal agencies; state, local, and tribal governments; and non-profit organizations.*

3. Should AMTech place restrictions on or limit consortium membership?

   OIDA/FPC response: *No restrictions or limits on consortium membership should be placed by AMTech. But the contributions from each proposed member of a consortium should be detailed in the proposal.*

4. Who should be eligible to receive research funding from an AMTech consortium? For example, U.S. companies i.e., large, medium, and/or small; institutions of higher education; Federal agencies; state, local, and tribal governments; and non-profit organizations?

   OIDA/FPC response: *All proposed members of a consortium should be eligible to receive some level of research funding, but it should not be mandatory that all members receive such funding. Consortia that require some level of match funding – actual or in-kind – in order for a member to receive consortium research funds should be given a competitive advantage in the awarding of consortia contracts by AMTech.*

5. What criteria should be used in evaluating proposals for AMTech funding?

   OIDA/FPC response:

   a) *Degree of satisfaction of each of the AMTech goals*
   b) *History of demonstrated effective technology transfer by each the consortium members*
   c) *History of effective participation in partnerships or consortia by each the consortium members*
   d) *History of effective partnership or consortia development and execution by each the consortium lead organization*
   e) *Percentage of proposed match funding by the consortium and each of its members*
   f) *Degree and realism of expected impact on the industry addressed by the consortium*

6. What types of activities are suitable for consortia funding?

   OIDA/FPC response:

   a) *Applied research and development on topics such as manufacturing processes, manufacturing technology with an emphasis on demonstrating prototypes and intellectual property. Basic research should not be funded.*
   b) *Projects that involve at least 1 company and one other type of consortium organization, e.g., institution of higher learning or federal agency.*

7. Should conditions be placed on research awards to ensure funded activities are directed toward assisting manufacturing in the U.S.?
   OIDA/FPC response:
   Yes, absolutely. But not only "assisting", but growing and increasing US competitiveness in manufacturing in the industry served by the consortium as well as in the creation of intellectual property germane to manufacturing techniques.

8. What are ways to facilitate the involvement of small businesses in AMTech consortia?
   OIDA/FPC response:
   a) *Require at least one industry trade association to participate in the consortium since small businesses are often a large fraction of the membership.*
   b) *Require a proposal to specify the fraction of research funds that will go to small businesses*
   c) *Define "small businesses" as "Small to Medium Enterprises (SMEs)" with 500 or fewer employees*

9. What are best practices for facilitating the widest dissemination and adoption of knowledge and technology through consortia?
   OIDA/FPC response:
   a) *Have zero licensing fees for consortium members for intellectual property developed with consortium funds*
   b) *Widely publicize the IP and other information developed by the consortium, including presentation at major industry conference events.*
   c) *Utilize licensing practices that are mutually beneficial to both the consortium owner and the licensee*
   d) *Have the consortium exhibit at major industry exhibition events*

10. While it is expected that the research efforts of AMTech consortia (including participants from the Federal, academic, and private industry sectors) will take place largely at the pre-competitive stage in the development of technologies, the generation of intellectual property is possible, and even likely. What types of intellectual property arrangements would promote active engagement of industry in consortia that include the funding of university-based research and ensure that consortia efforts are realized by U.S. manufacturers?
    OIDA/FPC response:
    a) *Have zero licensing fees for consortium members for intellectual property developed with consortium funds*
    b) *Have match funds for industry-funded research at universities*
    c) *Have joint ownership of IP by a company and a university where the research is conducted*

11. Would planning grants provide sufficient incentive for industry to develop roadmaps and initiate the formation of consortia? If not, what other incentives should be considered?
    OIDA/FPC response:
    a) *Planning grants would definitely be an incentive for industry as long as some funds of the grant go to industry or industry association participants*

12. Should each member of an AMTech consortium be required to provide cost sharing? If so, what percentage of cost sharing should be provided?
    OIDA/FPC response:
    a) *Cost sharing should be required for medium to large companies, and for federal agencies unless the agency is prohibited by law from such cost sharing. Other member types can offer cost sharing as an increased competitive advantage, but should not be required to provide cost sharing.*
    b) *The percentage of cost sharing for each member type should be proposed by the consortium, not specified in the RFP.*

13. What criteria should be used in evaluating research proposals submitted to an AMTech consortium?
    OIDA/FPC response:
    a) *The same criteria used to award the consortium grants should be used for evaluating research proposals*

14. What management models are best suited for industry-led consortia?
    OIDA/FPC response:
    a) *The Florida High Tech Corridor Council (FHTCC -- www.floridahightech.com/index.php) has had excellent success for over 15 years with participants from industry, university, and regional government economic development organizations. The programs and activities of the FHTCC are an excellent benchmark for industry-led consortia.*
    b) *Effective consortia need a strong, experienced leadership organization, but one that does not impose its viewpoints on other consortium members. A governing board with representatives from all consortium participants should drive the operation of a consortium.*

15. Should the evaluation criteria include the assessment of leadership and managerial skills?
    OIDA/FPC response: *Absolutely yes. And the experience of leaders of the consortium at all organizations should be an evaluation factor.*

16. Should limitations be placed on the duration of consortia?
    OIDA/FPC response:
    a) *Yes for the AMTech funding, with minimum of 3 years, maximum of 5 years.*
    b) *A sustainability plan should be a requirement for all consortium proposals.*

17. How should an AMTech consortium's performance and impact be evaluated? What are appropriate measures of success?
    OIDA/FPC response:
    a) *Annual reports should be required during the AMTech funding period, and for 3 years after the funding ends.*
    b) *Measures of success can include:*
        i. *The degree to which the consortium results meet the AMTech goals, and the degree to which it supports and strengthens the goals of the consortium and the industry it serves.*
        ii. *The technical merit, feasibility and likelihood of long-term success of the funded R&D, including strength of partnerships, student involvement in the research, commercialization plans for the R&D.*
        iii. *Intellectual property generated*
        iv. *Letters of support from companies and other organizations involved in the industry but not participating in the consortium as a member*
        v. *Amount of cost-sharing in the R&D work*

18. What are the problems of measuring real-time performance of individual research awards issued by an industry-led consortium? What are appropriate measures of success?
    OIDA/FPC response:
    a) *Getting full disclosure of results when some of them may be considered proprietary*

19. How should the NIST AMTech program be evaluated?
    OIDA/FPC response:
    a) *Results from annual reports of funded consortium that indicate the degree to which the AMTech goals are being met*

b) *Letters of support from organizations in the industries targeted by each consortium indicating how the program has positively impacted their products, business, and competitiveness*

20. What are lessons learned from other successful and unsuccessful industry-led consortia?
    OIDA/FPC response:
    a) *The SEMATECH success model is an excellent example to consider and apply. SEMATECH is considered to be a very successful consortium because the technology problems solved were common to the entire semiconductor industry. In a similar vein, packaging and assembly challenges are common to the entire optoelectronics industry, and require a common pooling of resources and leveraging of risks. This is best accomplished by establishing consortia such as AMTech with a focus on optoelectronic packaging and assembly. Upon successful development of an advanced manufacturing platform, it becomes a common resource for the entire industry, at which point the consortia could evolve into a membership-based model.*

CORNING

Dr. Richard Grzybowski
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September 9, 2011

Dear proposal evaluator,

Re: NIST's AMTech RFI

As an OIDA board member and avid supporter, Corning enthusiastically endorses OIDA's response to NIST's AMTech request for information. We strongly endorse OIDA's position that there is a critical need to develop advanced manufacturing technologies with a specific emphasis on facilitating the packaging and assembly of optoelectronic components. In our opinion, such an initiative would provide the much needed impetus to help develop a sustainable manufacturing strategy for optoelectronics, and would contribute substantially to the creation of much needed high technical skill jobs.

In addition, pursuant to the approval of the program for funding, we look forward to participation in the development of the technology with the ultimate goal of commercializing the technology.

About Corning:
Corning Incorporated (www.corning.com) is the world leader in specialty glass and ceramics. Drawing on 160 years of materials science and process engineering knowledge, Corning creates and makes keystone components that enable high-technology systems for consumer electronics, mobile emissions control, telecommunications and life sciences. Our products include glass substrates for LCD televisions, computer monitors and laptops; ceramic substrates and filters for mobile emission control systems; optical fiber, cable, hardware & equipment for telecommunications networks; optical biosensors for drug discovery; and other advanced optics and specialty glass solutions for a number of industries including semiconductor, aerospace, defense, astronomy and metrology.

Sincerely,

Dr. Richard R. Grzybowski
Research Director, Systems Engineering & Program Management
Corning Incorporated

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To whom it may concern:

As an OIDA board member and avid supporter, Infinera enthusiastically endorses OIDA's response to NIST's AMTech request for information. We strongly endorse OIDA's position that there is a critical need to develop advanced manufacturing technologies specifically to facilitate packaging and assembly of optoelectronic components. In our opinion, such an initiative would provide the much needed impetus to help develop a sustainable manufacturing strategy for optoelectronics, and would help promote jobs creation.

Furthermore, pursuant to the approval of the program for funding we look forward to participation in the development of the technology with the ultimate goal of commercializing the technology.

Regards,

Dr. Stephen Grubb
Infinera Fellow

About Infinera:
Infinera (http://www.infinera.com/) specializes in Digital Optical Networking systems that are designed to continually improve the economics of optical networking by combining the speed of optics with the simplicity of digital. Infinera is unique in its use of breakthrough semiconductor technology: Large Scale Photonic Integrated Circuit (PIC). Infinera's systems leverage PIC technology to provide customers with a service-ready architecture that enables faster time-to-revenue and greater profitability through network efficiency and the ability to rapidly deliver differentiated services without reengineering their optical infrastructure.

NORTHROP GRUMMAN

Northrop Grumman Corporation
Laser Systems
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8 August 2011

Ms. Barbara Lambis
Director, Grants Management Office
National Institute of Standards and Technology
100 Bureau Drive, M/S 1002
Gaithersburg, MD 20899-1022

RE: NIST AMTech RFI , Docket No.: 110620345–1331–02

Dear Ms. Lambis:

As an active member and strong supporter of the Florida Photonics Cluster (FPC), Northrop Grumman Corporation - Laser Systems (NGC-LS) is happy to have the opportunity to endorse the OIDA-FPC response to NIST's AMTech request for information.

We strongly support the OIDA-FPC position that there is a critical need to develop advanced manufacturing technologies specifically for manufacture, packaging, assembly, and inspection of optical, photonics, and optoelectronic components, subsystems, and systems. An industry-led consortium such as visualized by NIST for AMTech to assemble universities, companies, and government entities offers the mechanism for an essential partnership to solve universal issues for optics, photonics, and optoelectronics applications. Such a consortium would widely promote US jobs creation in numerous technology areas, including those addressed by NGC-LS, such as active and passive optoelectronics, solid state lasers and semiconductor laser diodes , small factor high yield power supplies, high definition micro-displays and many others. The consortium will also facilitate partnerships among suppliers and end-users that will preserve, maintain and develop manufacturing capabilities and jobs in the US and provide assistance to rapid technology transfer into cutting edge commercial applications.

We at NGC-LS look forward to approval of funding for the AMTech program, and to our company's participation in an optics, photonics, and optoelectronics consortium for development of the technology with the ultimate goals of commercializing the technology in support of additional US job creation and maintaining the position of the US manufacturing industry as a global competitor in these rapidly growing industry areas.

Northrop Grumman Corporation (NYSE: NOC) is a leading global security company providing innovative systems, products and solutions in aerospace, electronics, information systems, and technical services to government and commercial customers worldwide.

Sincerely,

Gordon R. Stewart
Vice President and General Manager

HARRIS

HARRIS CORPORATION

R. Kent Buchanan
Corporate Chief Technology Officer and
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6 September 2011

Ms. Barbara Lambis
Director, Grants Management Office
National Institute of Standards and Technology
100 Bureau Drive, M/S 1002
Gaithersburg, MD 20899-1022

Re: NIST AMTech RFI, Docket No.: 110620345–1331–02

Harris Corporation (www.harris.com) enthusiastically endorses the OIDA-FPC response to NIST's AMTech request for information. As an active member and strong supporter of the Florida Photonics Cluster (FPC), which is a consortium of photonics manufacturing companies predominately located in central Florida, we are sensitive to the need for a sound optical component manufacturing base. More importantly, many of our Government customers require sensitive classified systems that restrict key components to US manufacturers. Therefore, Harris Corporation clearly appreciates the critical strategic need to aggressively strengthen US optical manufacturing, such as would be provided by the NIST AMTech program.

We strongly endorse the OIDA-FPC position that there is indeed a critical need to develop advanced manufacturing technologies specifically for manufacture, packaging, assembly, and inspection of optical, photonics, and optoelectronic components, subsystems, and systems. An industry-led consortium, such as envisioned by NIST for AMTech to bring together companies, universities, and government organizations, will provide the mechanism for a much-needed partnership to solve common problems for optics, photonics, and optoelectronics applications. Such a consortium would definitely help promote the creation of US jobs in many industry segments and application areas, including those addressed by the Harris Corporation Government Communications Systems, in which our photonics manufacturing business resides. Just as importantly, the consortium will facilitate partnerships among suppliers and end-users that will help retain and grow manufacturing capabilities and jobs in the US and that will foster rapid transfer of technology into commercial application.

Harris Corporation firmly believes that the photonics consortium for the development of technology with the ultimate goals of commercializing manufacturing and packaging of photonics is vital so that US jobs are created and that the US manufacturing industry remains a leading global competitor in this rapidly growing industry. We at Harris Corporation look forward to approval of funding for the AMTech program.

Sincerely,

R. Kent Buchanan
Chief Technology Officer
Division VP Engineering, Government Communications Systems Division
Harris Corporation

Gooch & Housego

Ms. Barbara Lambis
Director, Grants Management Office
National Institute of Standards and Technology
100 Bureau Drive, M/S 1002
Gaithersburg, MD 20899-1022

9-Sep-11

Re: NIST AMTech RFI , Docket No.: 110620345–1331–02

As a strong supporter of the Florida Photonics Cluster (FPC) and CREOL, The College of Optics and Photonics at the University of Central Florida, Gooch and Housego enthusiastically endorses the OIDA-FPC response to NIST's AMTech request for information.

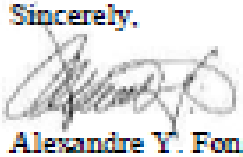
We strongly endorse the OIDA-FPC position that there is a critical need to develop advanced manufacturing technologies specifically for manufacture, packaging, assembly, and inspection of optical, photonics, and optoelectronic components, subsystems, and systems. An industry-led consortium such as envisioned by NIST for AMTech to bring together companies, universities, and government organizations will provide the mechanism for a much-needed partnership to solve common problems for optics, photonics, and optoelectronics applications. Such a consortium would definitely help promote US jobs creation in many industry segments and application areas, including those addressed by Gooch and Housego such as aerospace, medical imaging, high brightness LEDs, photovoltaics, telecommunications, defence, homeland security and industrial laser production automation. The consortium will also facilitate partnerships among suppliers and end-users that will help retain and grow manufacturing capabilities and jobs in the US and that will facilitate rapid transfer of technology into commercial application.

We at Gooch and Housego and in particular at the Orlando, Florida facility look forward to approval of funding for the AMTech program, and to our company's participation in an optics, photonics, and optoelectronics consortium for development of the technology with the ultimate goals of commercializing the technology so that US jobs are created and the US manufacturing industry remains a leading global competitor in these rapidly growing industry areas.

About Gooch and Housego:

Gooch & Housego is a manufacturer of precision optical components and sub-systems, as well as light measurement instrumentation and services, based upon key enabling optical technologies. We offer world leading design, development and manufacturing expertise across a broad, complementary range of technologies – Crystal Growth, Acousto Optics and RF Drive Electronics, Electro Optics, Fibre Optics, Optical Polishing & Coatings, Spectroradiometers, Integrating Sphere Calibration Standards, NIST-Traceable Calibration Standards and Services, Spectral Imaging and Synthesis across our facilities in Moorpark, CA, Cleveland, OH, Palo Alto, CA, Bedford, MA, Lakewood, NJ, Orlando, FL, Melbourne, FL, Ilminster, UK, Torquay, UK, and Nordersteat, Germany.

Sincerely,



Alexandre Y. Fong
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