AMERICAN INSTITUTE FOR MANUFACTURING INTEGRATED PHOTONICS (AIM PHOTONICS)

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Abstract

The National Network for Manufacturing Innovation (NNMI) is a network of research institutes in the United States that focus on developing and commercializing manufacturing technologies through public-private partnerships between U.S. industry, universities, and federal government agencies. The newest Institute was announced July 27, 2015: The American Institute for Manufacturing Integrated Photonics (AIM Photonics). This Institute is focused on developing an end-to-end photonic integrated circuit (PIC) ecosystem in the U.S., including domestic foundry access, integrated design tools, automated packaging, assembly and test, and workforce development. The Institute will develop and demonstrate innovative manufacturing technologies for:

- Ultra-high-speed transmission and switching of signals for the Internet and telecommunications
- Microwave photonic PICs
- Multi-sensor applications including chem-bio sensors, urban navigation, and other topics

The AIM vision is to establish a technology, business and education framework for industry, government and academia to accelerate the transition of integrated photonic solutions from innovation to manufacturing-ready deployment in systems spanning commercial and defense applications.

 Silicon photonics has the potential to significantly reduce the cost of optical devices used in many traditional applications in addition to enabling new devices and applications. This is because of the maturity of CMOS processing facilities and infrastructure and because of the capabilities and efficiency of photonic integration. The ability to integrate photonic devices with CMOS electronics in a wafer scale manner can greatly increase the capacity of integrated circuits and reduce the size, weight, power dissipation while simultaneously increasing the reliability of the systems employing these components. The low loss of silicon waveguides enables large, complex passive components to be made without significant signal attenuation. It also improves the performance of lasers, resulting in lower thresholds and narrower linewidths. AIM Photonics provides a variety of solutions for integrating the critical functionality of III-V materials, ranging from monolithic InP PICs to heterogeneous materials integration.

This presentation will summarize the AIM Photonics Institute and over 50 partners participating in the Institute. It will summarize the impact AIM Photonics can have on the Avionics community and ways for industrial, government and academic users to use the foundry and other services in AIM Photonics.