



American Institute for Manufacturing Integrated Photonics

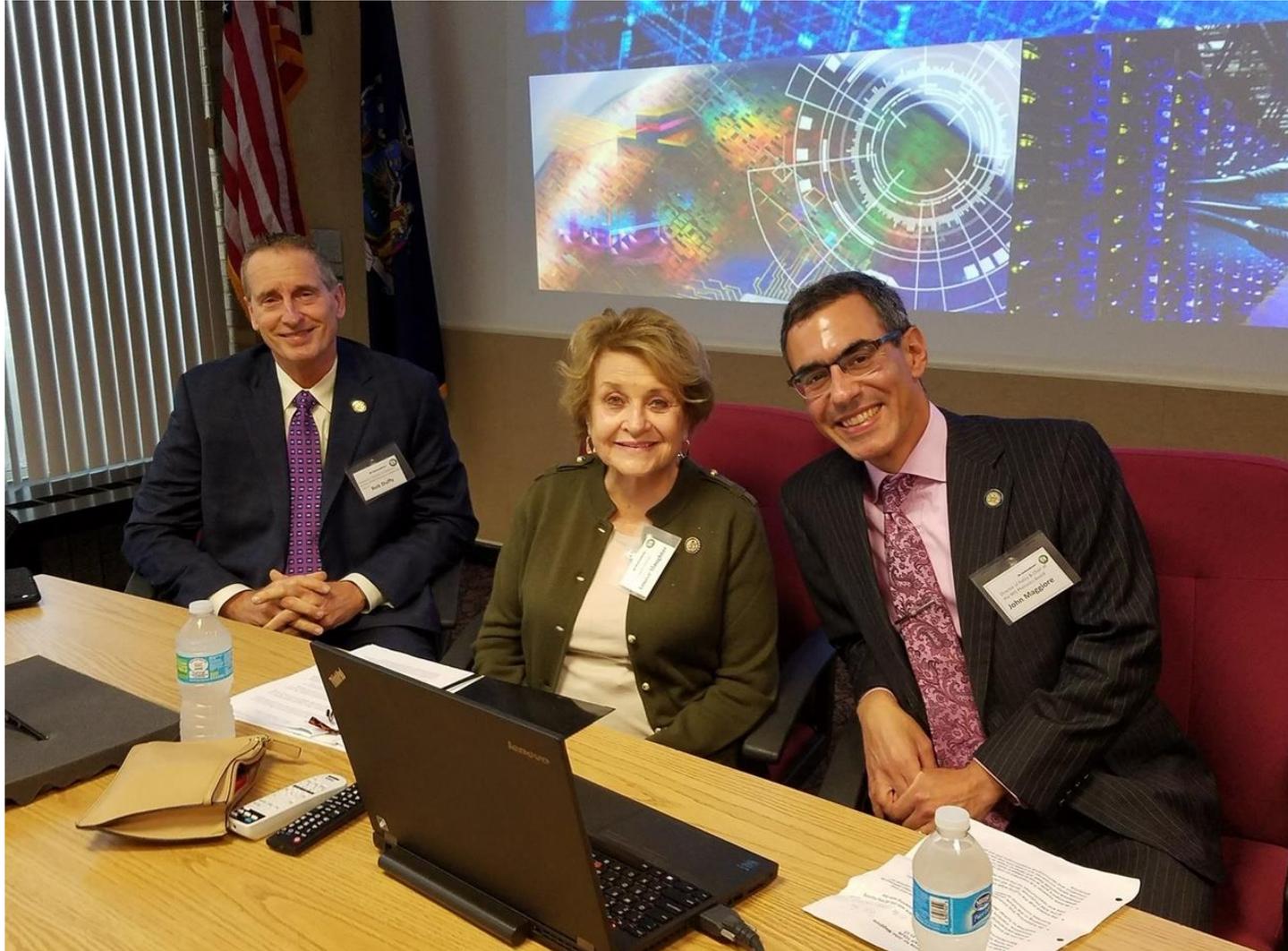
November 26, 2018

NY Photonics Board Meeting

Agenda:

1. 1st Members Meeting Summary
2. Product Pipeline
3. Budget Status
4. TAP Status





Over 90 participants,
targeted SMEs

Format:

1. Company presentations
2. Key notes
3. Networking



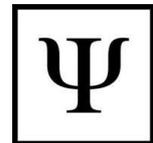
AIM
photonics

MEMBERS MEETING
Central NY Biotech Accelerator
TED Theatre
841 E. Fayette St.
Syracuse, NY 13210
October 23, 2018
8am - 4pm
www.aimphotonics.com/membersmeeting

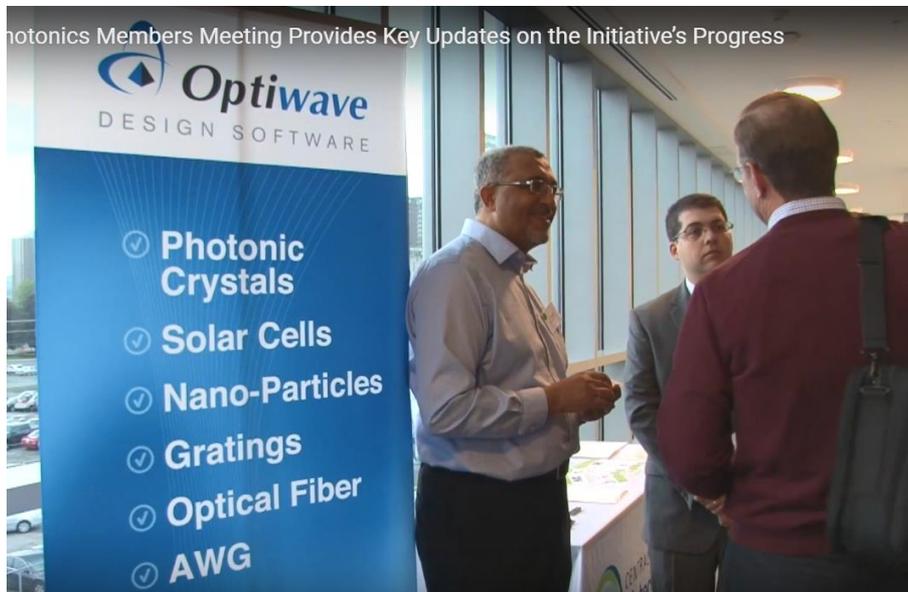


Featured Presentations:

LUMINATE
ROCHESTER, NY
Optics, Photonics & Imaging Startup Accelerator



- Over 60 registered participants were members
- 30 of those provided presentations in sessions and panel discussions
- Majority supported presentations but asked for more networking time
- Positive response to networking breakfast, lunch, and evening reception
- 98% would like to see continued with more networking time
- Sponsorship by new and old members key to event success



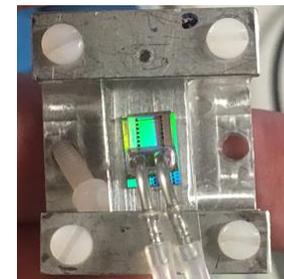
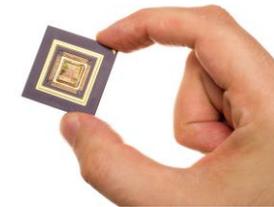
- Number of positive responses below with some improvement recommendations
 - Over 30 respondents of which 80% were industry and remaining university, government, and some AIM representatives
 - 40% of respondents observer members, 35% Tier 3, with remaining other
 - Of the 30 respondents, On a scale of 1-10 >84% said they were extremely satisfied (1) to satisfied (2) with the meeting. Remaining were 3-5. Average was overwhelmingly satisfied with meeting.
 - Valuable input responses as seen below and continued on following pages

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* What are your reasons for being an AIM member? ⇄

Answer	0%	100%	Number of Responses	Response Ratio
Access to discounted MPW runs			5	17.8%
Access to AIM Members Meetings and other Member networking events			18	64.2%
Right to participate in and/or propose a project			14	50.0%
Right to designate candidate to serve on AIM Leadership Council			1	3.5%
To learn more about Integrated Photonics via AIM Academy			7	25.0%
To participate in Road Map meetings			9	32.1%
Other (View all)			8	28.5%
			Totals	28
				100%

- **Commercial product transitioning to high volume production in 1Q2019.**
- **Silicon Photonic Integration on a Passive Interposer for High Dynamic Range RF Photonic Links** - Demonstrate low-cost, high-performance RF/analog interconnects for commercial and military applications using the full suite of silicon photonic integrated circuit and interposer manufacturing technologies offered by AIM Photonics.
- **Solid-State LiDAR with Integrated Optical Phased Arrays** – Enable small-volume U.S. manufacturing at AIM Photonics for solid-state LiDARs for the defense market utilizing the existing high-performance optical phased arrays developed at Analog Photonics.
- **Integrated Photonic Sensors** – Focused on replacing existing clinical analyzers, with a further goal of providing new capability (allowing determination of multiple clinical biomarkers at once) and permitting reductions in size, weight, and power for clinical analyzers by 50%.



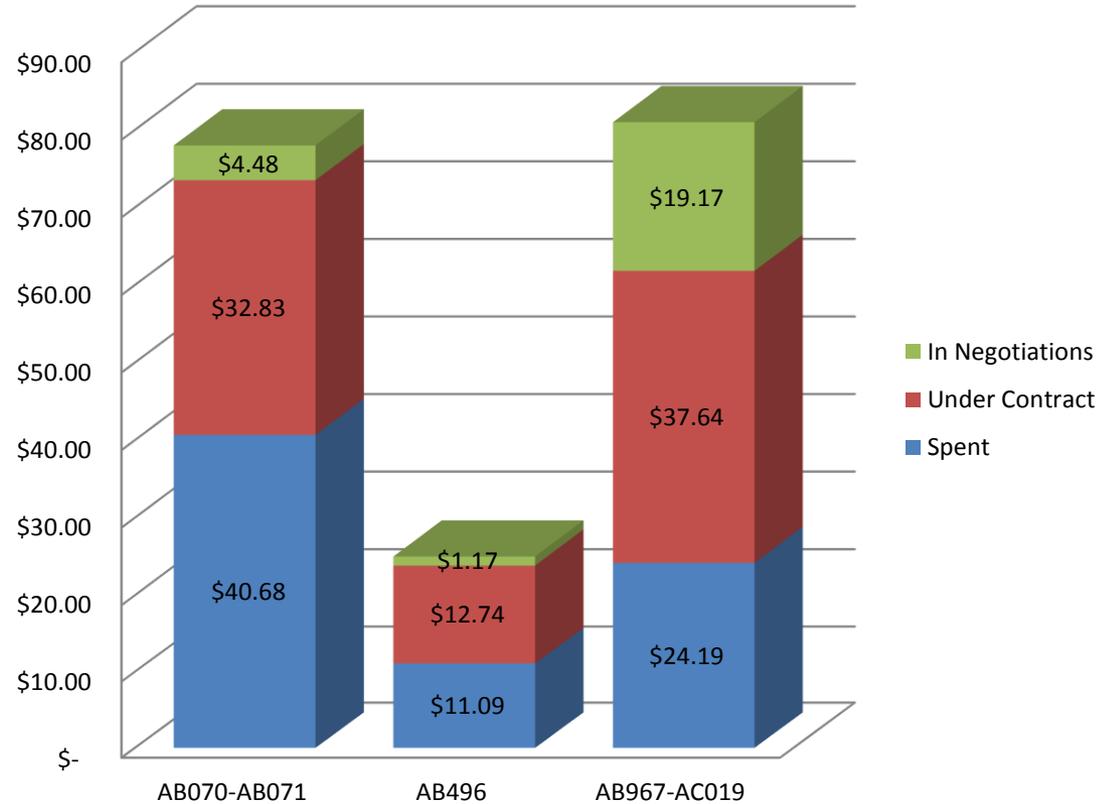
AIM ESD Awarded Funds

The following three ESD grants (\$187M) have been fully executed and awarded to AIM Photonics:

1. \$78M - AB070/AB071
2. \$28M - AB496*
3. \$81M - AB967/AC019

Additional funds (\$63M) have been either requested, assigned, or will be requested in the near future:

- \$30M – Photonics Attraction Fund**
- \$30M – Operational Funds***
- \$3M – Expanded Tooling

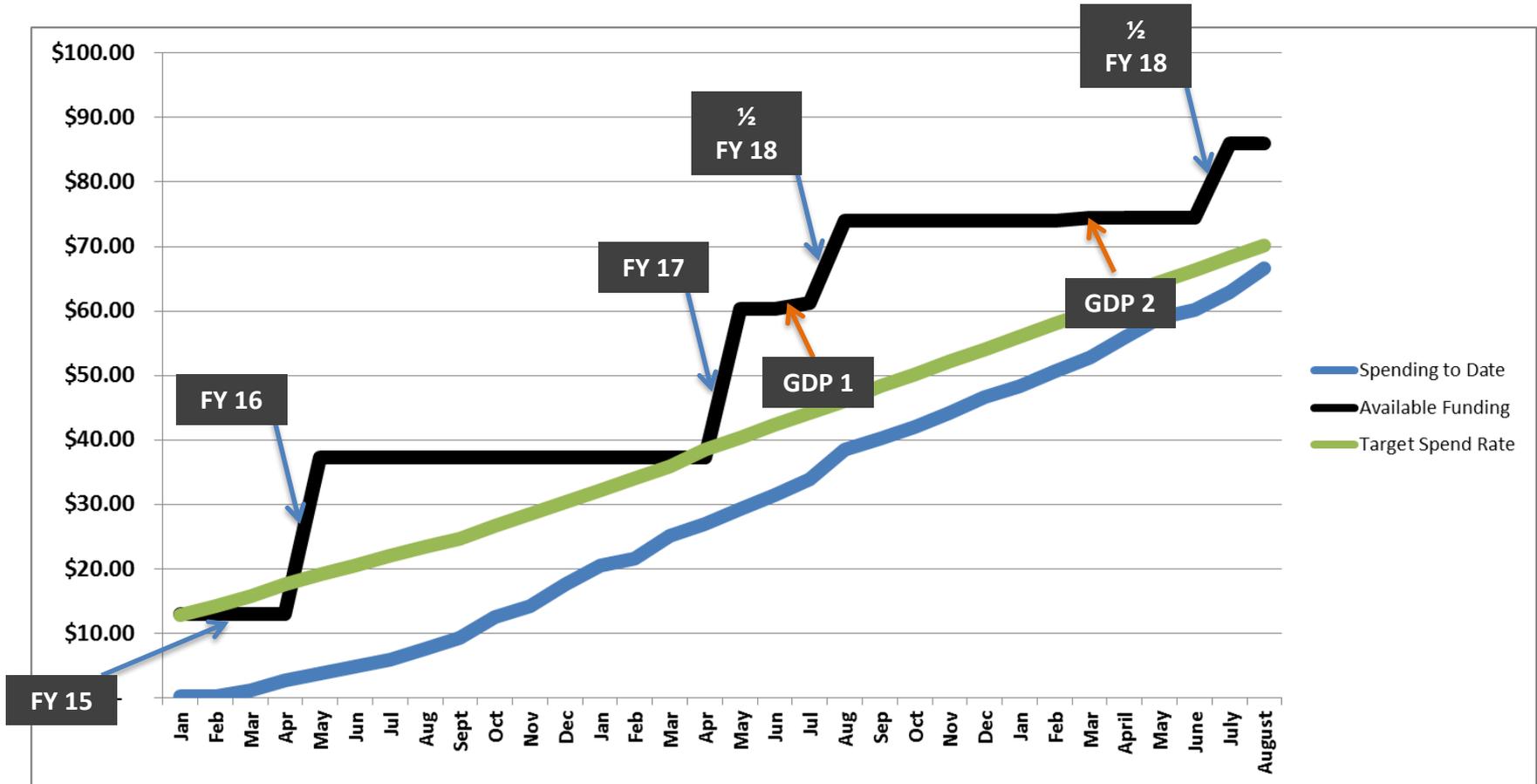


	Spent	Under Contract	In Negotiations
Total	\$ 75.96	\$ 83.22	\$ 24.82

* We are forecasting savings of \$3M plus any additional construction savings as part of this award.

**Photonics Attraction Fund was introduced by Gov. Cuomo during the 2018 State of the State address.

*** Approved by the NY Board during on 2/28/18. Will be presented and reviewed at the next ESD board meeting.



	2018							
	Jan	Feb	Mar	April	May	June	July	August
Available Funding	\$ 73.98	\$ 73.98	\$ 74.39	\$ 74.39	\$ 74.39	\$ 74.39	\$ 85.98	\$ 85.98
Spending to Date	\$ 48.34	\$ 50.72	\$ 52.84	\$ 55.83	\$ 58.88	\$ 60.13	\$ 62.97	\$ 66.64
Target Spend Rate	\$ 56.04	\$ 57.96	\$ 59.88	\$ 62.49	\$ 64.43	\$ 66.33	\$ 68.27	\$ 70.20



American Institute for Manufacturing Integrated Photonics

NY Photonics Board Meeting TAP Update

November 26, 2018





Tools arriving at TAP



Tool lifting platform



Tool lifted to 5th floor



Electrolytic Plater
In place in 5 East



Electroless Plater
In place in 5 East

- Near term customers are requesting TAP services
 - Fiber Attach
 - Die Attach
 - Laser attach (developed in Albany)
 - Electronic Packaging – Wirebond, SMT

- TAP – Interposer Strategy
 - Laser / PIC attach on interposer complete at Albany initially – finalize package in TAP
 - Planning either Si based or laminate packages
 - Need to define packaging formats
 - TAP to have optical / electrical functional testing on wafer, chip and package level

Customer	Work	Estimated Timing
A	Laser Attach/Fiber Attach/Electronic Pkg	4Q2018
B	Fiber Attach	4Q2018
C	Laser Attach/Fiber Attach/Electronic Pkg	4Q2018
D	Laser Attach/Fiber Attach/Electronic Pkg	1Q2019
E	Photonic Wafer Test	1Q2019
F	Die Bonding/Flip Chip/Electro-Optical Testing	1Q2019
G	Die Attach/Electronic Pkg.	1Q2019
H	Lithography / Vapor Deposition Considerable Volume	2Q2019
I	Die Attach/Fiber Attach/Electronic Pkg	~ 3Q2019
J	Fiber Attach/Laser Attach	TBD
K	25% Capacity (of 4 tools)	TBD
L	Die Attach	TBD

1st
Customers

	Nov 2017	1Q2018	2Q2018 Forward
Offices Complete and Available			
Labs Ready to Receive Tools			
Cleanrooms ready to Receive Tools			
Tool Installation			



Offices ready November 2017

- Offices/conference rooms/break room completed November 2017
- Staff has moved in

Cleanrooms and labs ready 1Q2018

- Cleanrooms and Labs were ready to receive tools at the end of 1Q2018

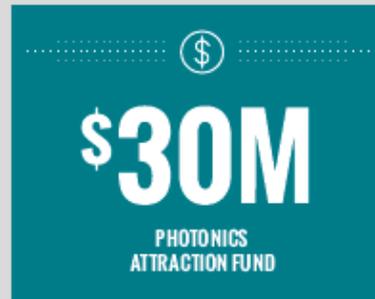
Tool Installation 2Q2018

- Tool Installation has begun (raised floor installed, tool utilities are being installed. Tools are being placed in clean rooms)

TAP Operational 2H2018 – TAP operations will begin with first customers late 2018.

NEW YORK STATE PHOTONICS ATTRACTION FUND

New York State has dedicated \$30 million for a Photonics Attraction Fund (PAF) to encourage companies to setup or expand their manufacturing operations for integrated photonics technologies in the Greater Rochester area. The PAF program was established in 2018 as part of the \$250 million commitment by NYS to the American Institute for Manufacturing Integrated Photonics (AIM Photonics), which is a Manufacturing USA institute sponsored by the Department of Defense.



Created by Gov. Cuomo as part of NYS \$250M commitment.

Now available to help companies expand production.

New website:
[www.esd.ny.gov/
photonics-attraction-fund](http://www.esd.ny.gov/photonics-attraction-fund)

OVERVIEW



Under the leadership of Governor Cuomo, New York State is restoring its legacy as a leader in technology and innovation by making locally-driven investments in frontier technologies. In Greater Rochester—also known as the Finger Lakes region—the *Finger Lakes Forward* strategic plan for economic growth focuses on the region's strong industry cluster of optics, photonics and imaging (OPI) that helped attract AIM Photonics.



To establish AIM Photonics, New York has committed \$250 million to build a new



Learn More: www.aimphotonics.com

Some of this material is based on research sponsored by Air Force Research Laboratory throughout the American Institute for Manufacturing Integrated Photonics (“AIM Photonics”) under agreement number FA8650-15-2-5220.