



Advanced Wet-Cleaning Tools for Leading Edge IC Fabs

**Semicon West, San Francisco
July 2019**



Disclaimers

Forward-Looking Statements. Actual results may vary significantly from ACM Research's expectations based on a number of risks and uncertainties, including but not limited to the following: anticipated customer orders or identified market opportunities may not grow or develop as anticipated; customer orders already received may be postponed or canceled; suppliers may not be able to meet ACM Research's demands on a timely basis; volatile global economic, market, industry and other conditions could result in sharply lower demand for products containing semiconductors and for ACM Research's products and in disruption of capital and credit markets; ACM Research's failure to successfully manage its operations; and trade regulations, currency fluctuations, political instability and war may materially adversely affect ACM Research due to its substantial non-U.S. customer and supplier base and its substantial non-U.S. manufacturing operations. ACM Research cannot guarantee any future results, levels of activity, performance or achievements. The industry in which ACM Research operates is subject to a high degree of uncertainty and risk due to variety of factors, including those described in ACM Research's public filings with the Securities and Exchange Commission, including its Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2019 for a more complete discussion of these factors and other risks, particularly under the heading "Risk Factors." ACM Research expressly disclaims any obligation to update forward-looking statements after the date of this press release.

Market Data. Information presented below in the third bullet under "Who is ACM Research?" and the first item under "Investment Highlights" contains estimates of ACM Research concerning ACM Research's total addressable markets ("TAM") that are based on industry publications, reports and customer-generated information. This information involves a number of assumptions and limitations, and you are cautioned not to rely on or give undue weight to this information. ACM Research has not independently verified the accuracy or completeness of the data contained in these publications, reports or filings. The industry in which ACM Research operates is subject to a high degree of uncertainty and risk due to variety of factors, including those described in ACM Research's public filings with the Securities and Exchange Commission, as described above.

Note Regarding Presentation of Non-GAAP Financial Measures. Information presented below under "Q1 2019 Operating Highlights" and "Q1 2019 Financial Results" includes certain "non-GAAP financial measures" as defined in Regulation G under the Securities Exchange Act of 1934, including non-GAAP gross margin, non-GAAP operating margin, non-GAAP gross profit and non-GAAP operating profit. These supplemental measures exclude the impact of stock-based compensation, which ACM Research does not believe is indicative of its core operating results. A reconciliation of each non-GAAP financial measure to the most directly comparable GAAP financial measure is included under "GAAP to Non-GAAP Reconciliation."

ACM Management and Board of Directors

ACM Management Team Decades of Industry Experience



David Wang, CEO

*Exp: Questar Tech
Ph.D. Osaka University;
BS Tsinghua University*



Lisa Feng, CAO

*Exp: Coherent, Amlogic
Masters: Accounting*



Mark McKechnie, VP Finance

*Exp: Intel, Motorola, Evercore
MBA Kellogg, BSEE Purdue*



Jian Wang, CTO

*Exp: 20+
MSc*



So Cheav, VP Mfg

*Exp: 25+
BSc*



Fuping Chen, VP Sales

*Exp: SK Hynix
MSc*

Board of Directors

Average of 25+ Years Experience in Semiconductor Industry and High Tech Business



Dr. David H. Wang

ACM CEO & Founder



Dr. Haiping Dun

*Engineering Director at Intel;
CEO at Champion*



Prof. Chenming Hu

*Inventor of FinFET;
Professor at UC Berkeley*



Tracy Liu

*Managing Partner of
H&M Int'l Accounting*



Yinan Xiang

*General Manger of
SSTVC*



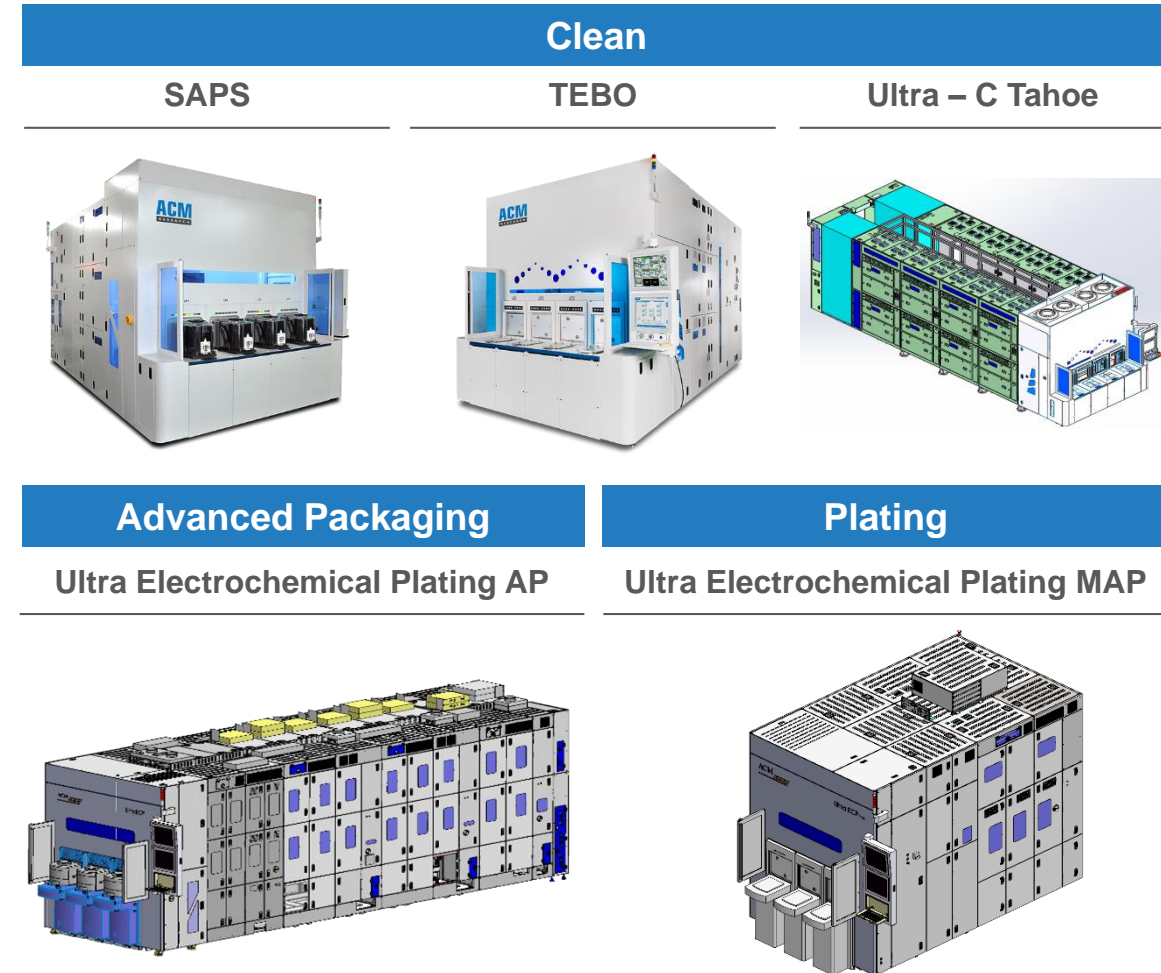
Zhengfan Yang

*Director of
Sino IC*

Who is ACM Research?

Mission Statement: To Become a Leading Global Provider of Semiconductor Capital Equipment

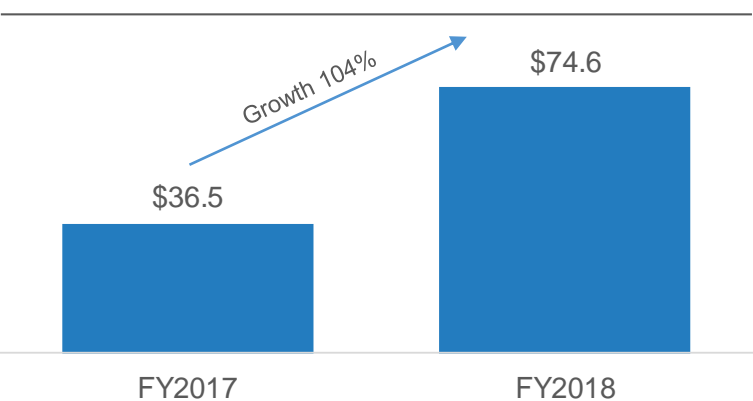
- **Best-in-class semiconductor wafer cleaning tools** providing higher yields and better efficiency at advanced fabs than conventional wafer cleaning tools
- **Differentiated megasonic technology** delivers highly effective single-wafer wet cleaning for flat and patterned wafer surfaces (SAPS) and damage-free cleaning for advanced 3D patterned wafers (TEBO)
- **\$3B single-wafer wet cleaning TAM**, an estimated 50% of which is addressed by current products with future expansion from new products
- **More than 220 patents** issued in the U.S., China, Japan, Korea, Singapore and Taiwan as of 3/31/19
- 86,000 sq. ft. across **two production facilities in Shanghai** offers significant capacity for growth
- **Headquartered in Fremont, CA** with more than 270 employees globally



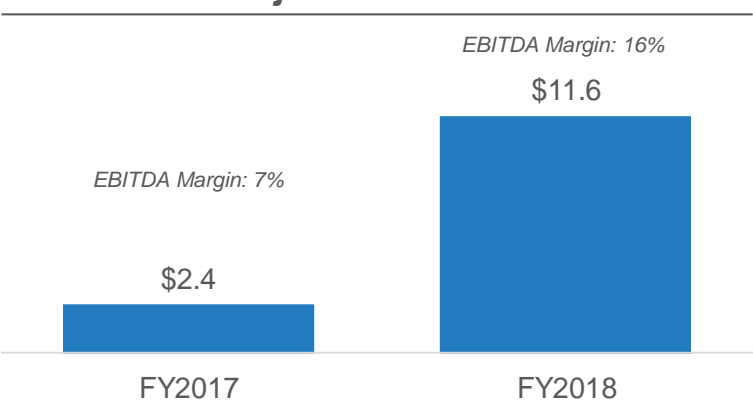
ACM is Growing at a Rapid Pace

(\$ in millions)

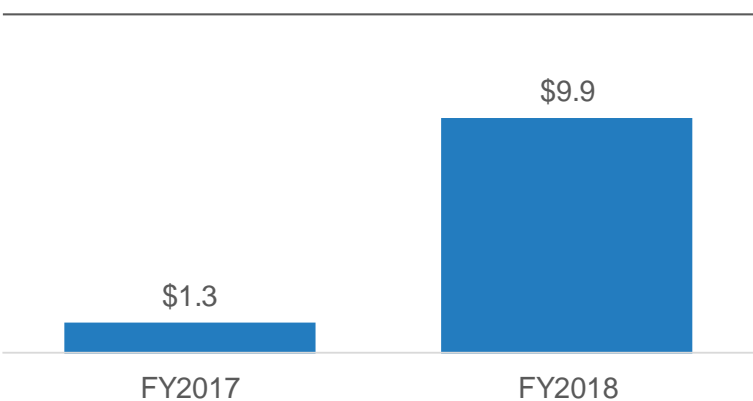
Revenue



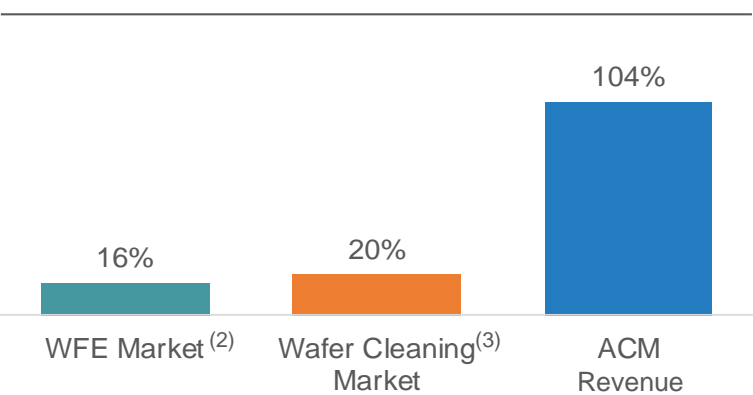
Adjusted EBITDA



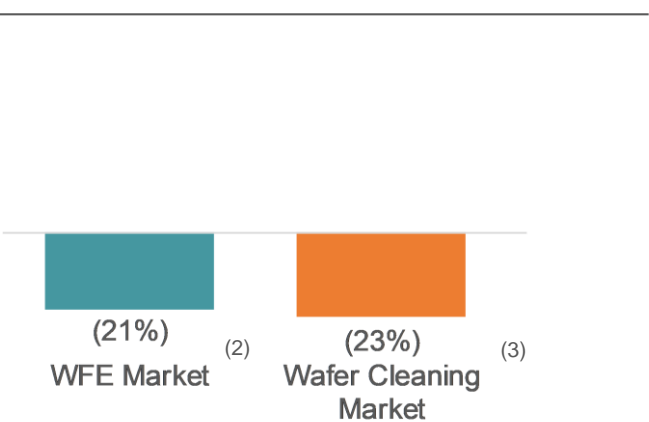
Net Income ⁽¹⁾



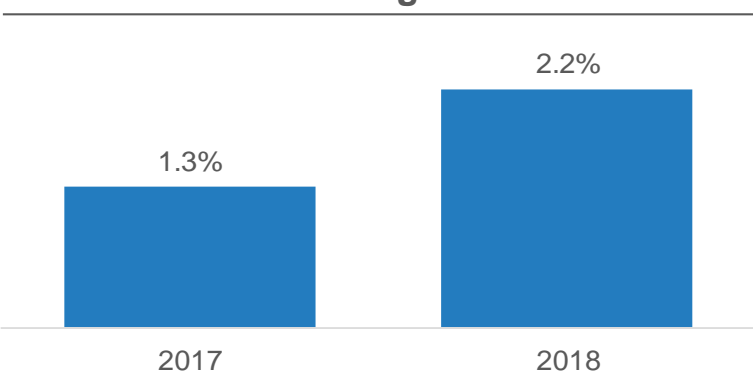
2017 – 2018 Growth



2018 – 2019E Growth

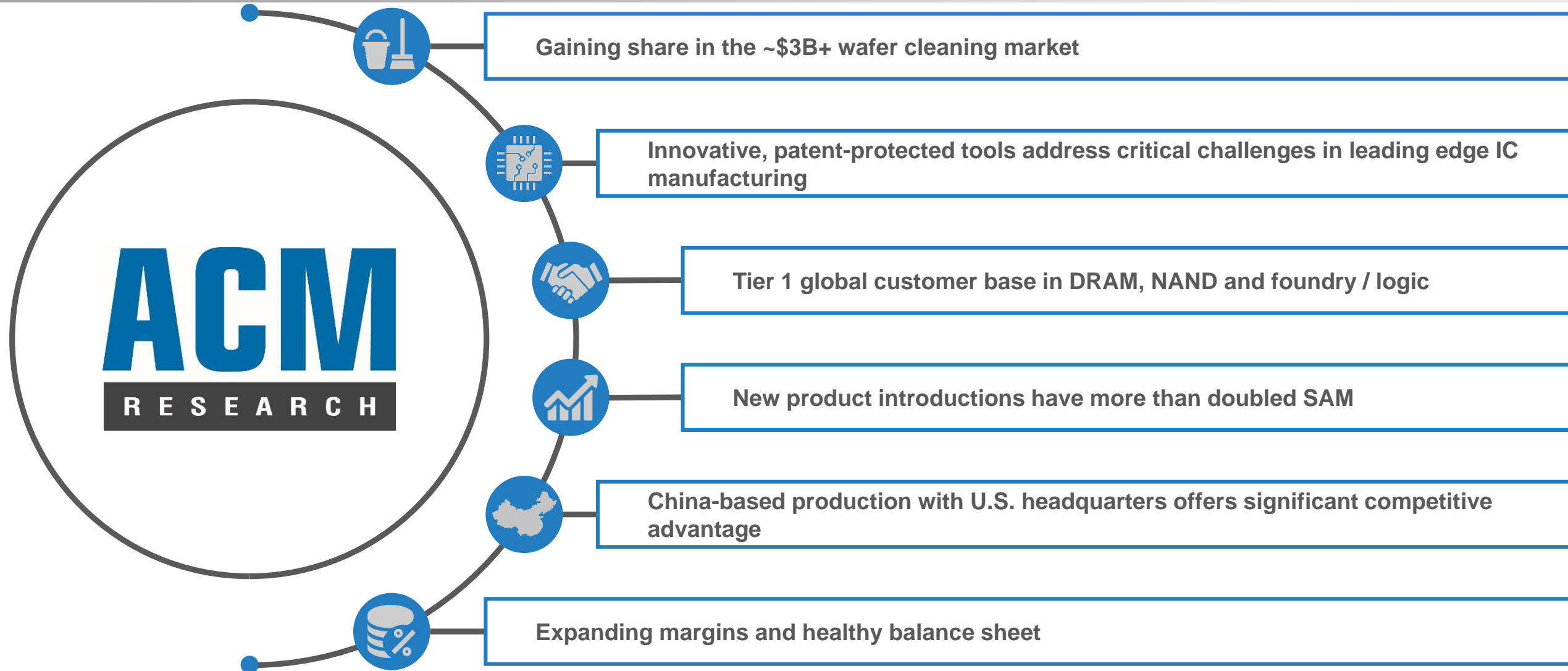


ACM Wafer Cleaning Market Share ⁽⁴⁾



(1) Based on non-GAAP net income. (2) Source: Gartner – Global Wafer Fab Equipment Market (Including Advanced Packaging). (3) Source: Gartner – Auto Wet Stations, Single-Wafer Processors and Other Clean Process markets. (4) Calculated as ACM Research revenue / Wafer Cleaning Market size in each respective year.

Investment Highlights



What is Wafer Wet Cleaning?

Wafer cleaning is a critical process in wafer fabrication that is repeated more than any other process

- Random defects arise during virtually all process steps in the wafer manufacturing process, resulting in yield loss and impaired chip performance
- Cleaning is the process of eliminating random defects on wafers
- There are two basic types of cleaning: wet cleaning and dry cleaning
- Cleaning typically occurs between other process steps (e.g., etch, deposition)

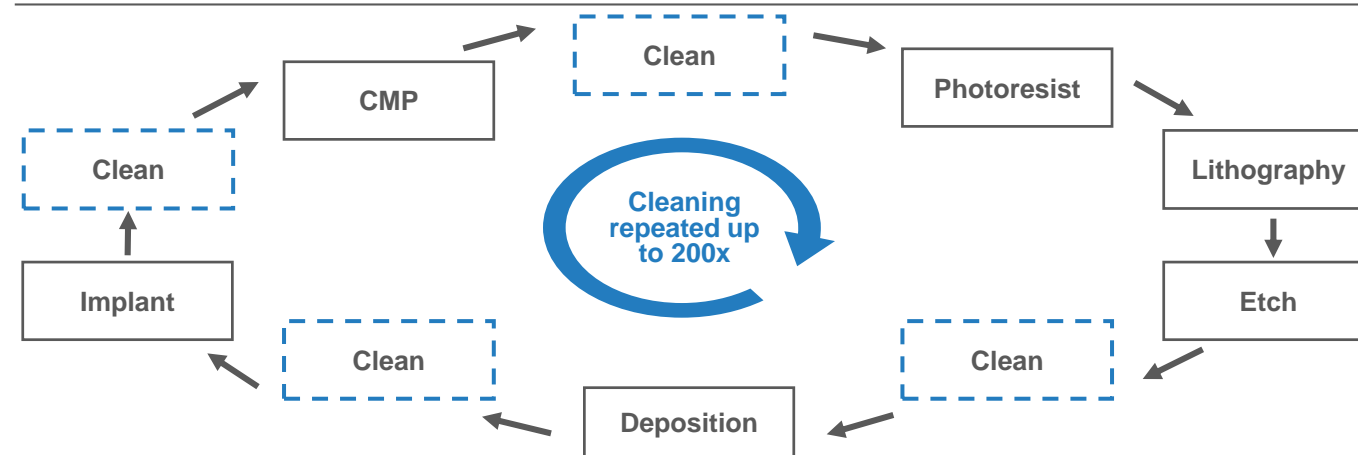
Key Benefits

- ✓ Improved Yield
- ✓ Customer Satisfaction
- ✓ Reduces Costs
- ✓ Extends Moore's Law

Wet Cleaning

- Uses liquid chemistry to spray, scrub, etch and dissolve random defects
 - ▶ **Liquid chemistries include combinations of solvents, acids and water**
 - More effective than dry cleaning in achieving surface cleanliness and smoothness
- ~90% of cleaning steps in wafer fabrication**

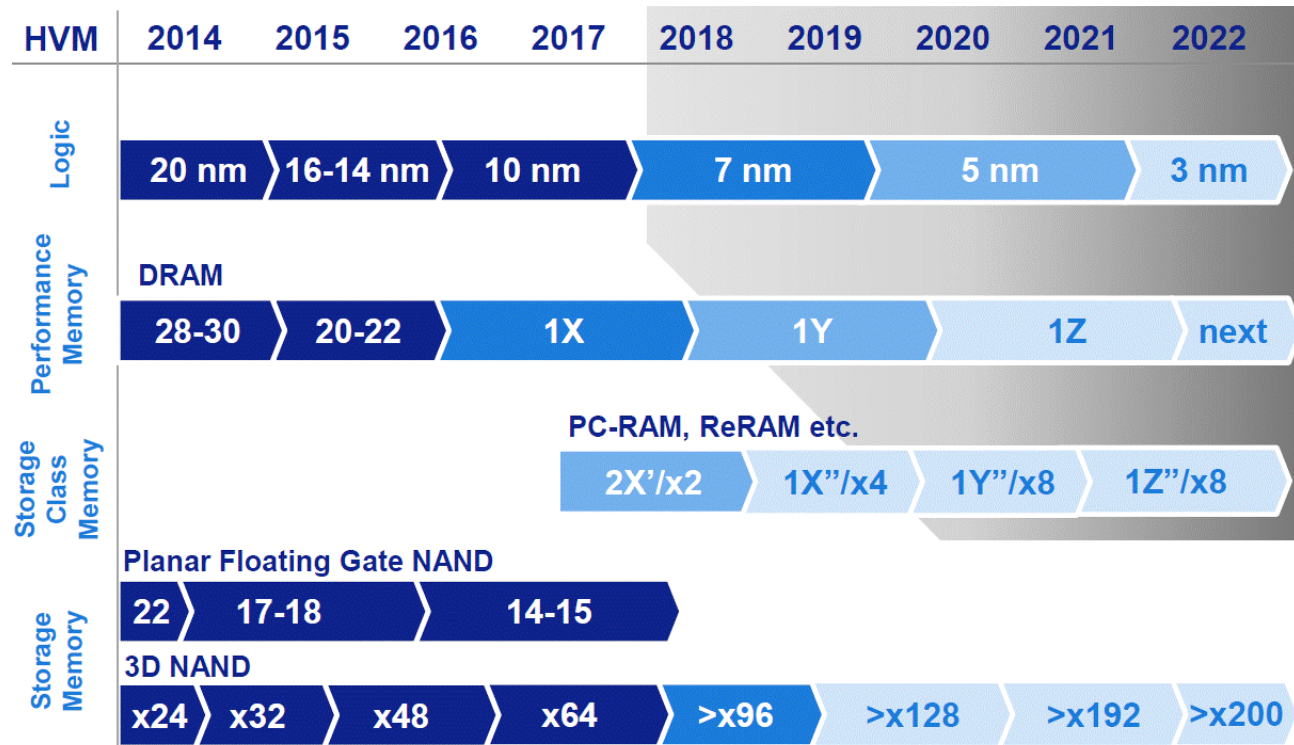
Front-End Processing Steps



Semiconductor Roadmap Requires More Advanced Cleaning Capabilities

ACM products drive yield benefits across logic, NAND and DRAM

IC Roadmap: Transistor Shrink, FinFETs & Larger Wafers ⁽¹⁾



Key Process Equipment Groups

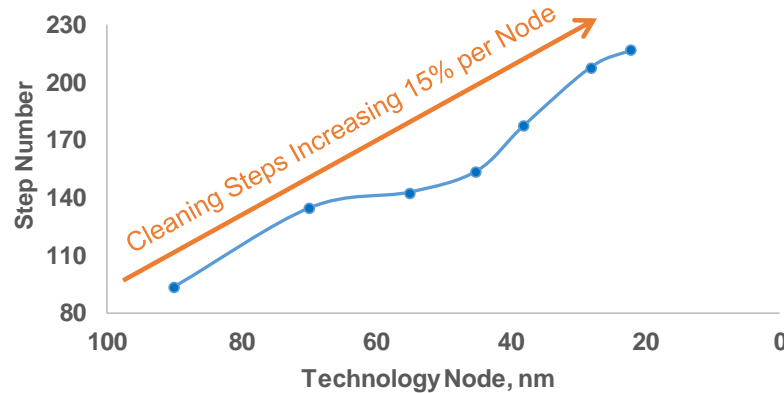
- Implantation
- Deposition
- Lithography
- Etch
- Clean
- CMP
- Metrology

Most Critical for 22nm and Smaller Node Devices

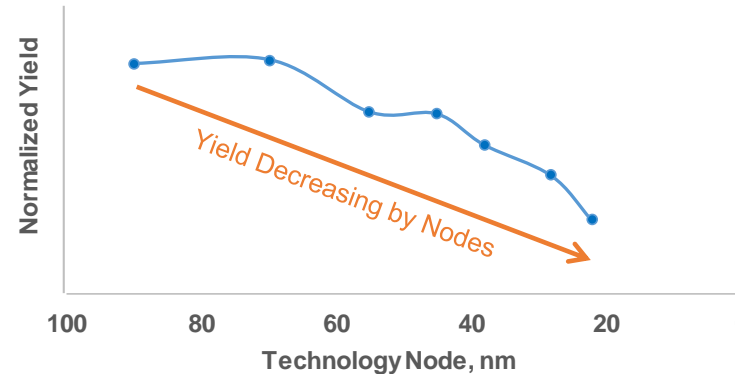
(1) Source: ASML 2018 Presentation.

Wafer Cleaning is More Important Now Than Ever

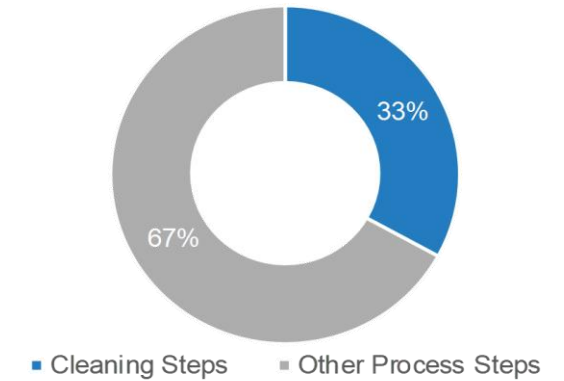
Total Cleanings Steps



Wafer Die Yield



Cleaning Steps vs. Other Processes

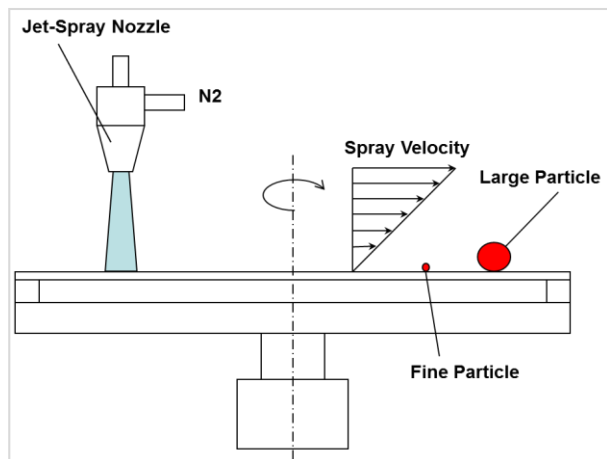


- Eliminating random defects through precise wafer cleaning steps is a critical component of the semiconductor manufacturing process
- Over the past 25 years wafer wet cleaning has become increasingly sophisticated and efficient in order to keep up with the rapid downsizing of device features
- Cleaning steps account for one third of all process steps and can be repeated up to 200 times
- 1% yield loss can lead to annual profit decrease of \$30M to \$50M ⁽¹⁾

(1) Source: ACM customer data and ACM estimates.

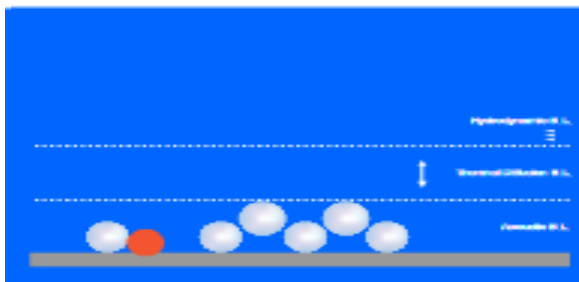
SAPS Clean Technology: Uniformly Removes Fine Particles/Defects

Single Wafer Jet-Spray Clean



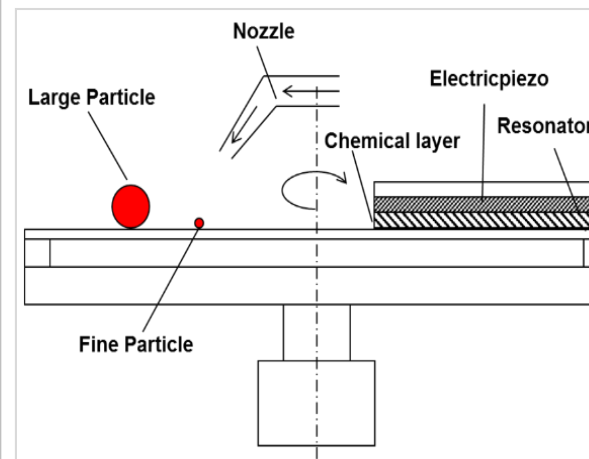
- Legacy solution offered by competitors
- Ineffective in removing small particles

Megasonic Removes Small Particles



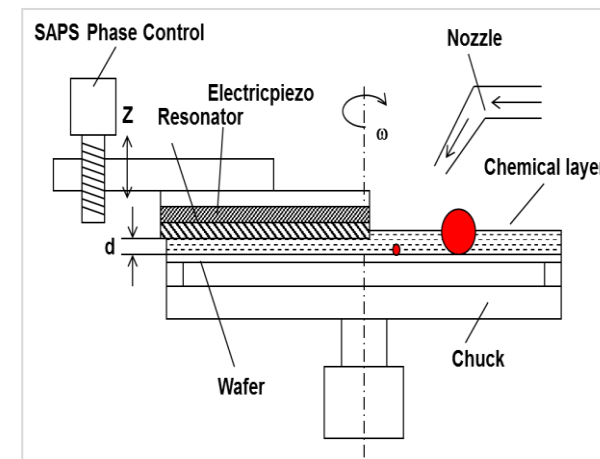
- Megasonic wave creates cavitation
- Cavitation moves particle away from surface

Conventional Megasonic Clean



- Effectively removes defects below 45nm
- Challenges with warped wafers
- Damage to patterned structures

ACM Megasonic: SAPS



- Proprietary SAPS ultrasonic design
- Uniform energy delivery
- Proven results for DRAM, 3D NAND, and Foundry Processes

Tier One Customer Base



- Major new entrant into NAND flash and DRAM industry
- Expanding capacity with construction of \$24B production facility in Wuhan⁽¹⁾
- Proprietary Xtacking architecture which they are using to produce 3D NAND products⁽²⁾
- ACM 2018 Revenue %: 39% (Primarily 3D NAND)



- Leading advanced foundry in China
- Manages first fully automated 300mm wafer production line in mainland China⁽³⁾
- Production capacity for 35,000 wafers per month⁽⁴⁾
- ACM 2018 Revenue %: 24% (Primarily Foundry / Logic)



- Global market leader in memory (DRAM & NAND) semiconductor products
- ACM's first major customer
- Expected to spend \$107B in the coming years to build four new memory chip plants⁽⁵⁾
- ACM 2018 Revenue %: 23% (Primarily DRAM)



- Mainland China's largest foundry
- Tier one customer base including Qualcomm, Broadcom and Texas Instruments
- Six strategically located fabs in China and Western Europe
- Building \$10B fab to produce 14nm, 10nm and 7nm chips⁽⁶⁾



- Largest bumping house in China and leading WLCSP production base
- Subsidiary of OSAT company JCET
- Owns one of the most advanced packaging technology R&D service platforms⁽⁷⁾
- Global customer base with exposure to the U.S., Western Europe and Asia



- Leading outsourced semiconductor assembly and test provider (#7 globally and #3 in China)
- Fastest growing OSAT provider globally with 32% year-over-year revenue growth⁽⁸⁾
- Recently announced creation of a joint-venture with AMD to offer differentiated assembly, test, mark and pack (ATMP) capabilities

(1) Source: Nikkei Asian Review. (2) Source: YMTC Press Release. (3) Source: HLMC Press Release. (4) Source: HLMC Press Release. (5) Source: Reuters. (6) Source: AnandTech. (7) Source: JCAP Company Profile. (8) Source: Electronics Weekly.

Single-Wafer Wet Cleaning Products

Innovative, patent-protected tools address critical challenges in leading edge IC manufacturing

SAPS



*Megasonic Cleaning for
Flat and Patterned Wafer
Surfaces*

- ✓ High efficiency with enhanced process flexibility
- ✓ Uniform and consistent results
- ✓ Customizable specifications

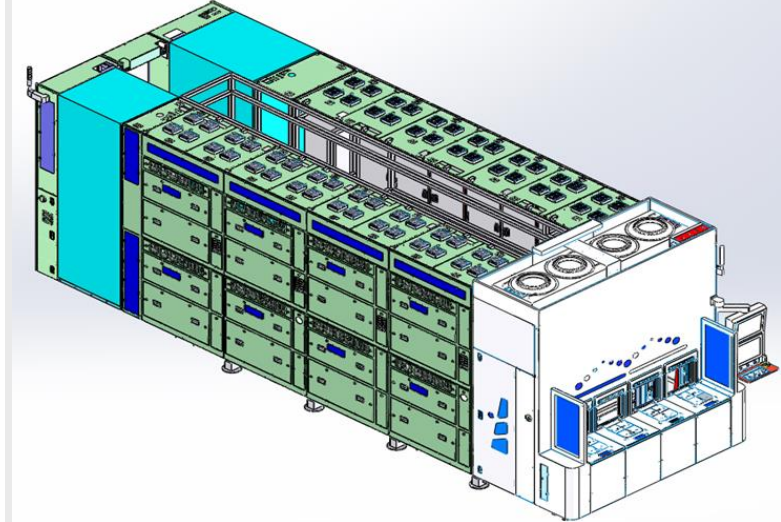
TEBO



*Bubble Oscillation Cleaning for
Patterned Wafers at Advanced
Process Nodes*

- ✓ Highly effective, damage-free solution for small and fragile features
- ✓ Multi-parameter bubble cavitation control

Ultra – C Tahoe



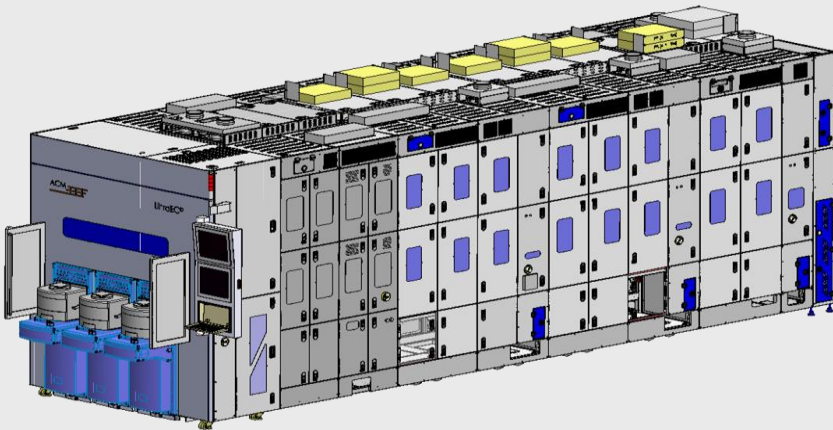
*Hybrid Wafer Cleaning With Significant
Cost & Environmental Benefits*

- ✓ Environmentally-friendly with 90% less sulfuric acid used than conventional tools
- ✓ High cleaning performance at low cost

New Electrochemical Plating Products – Introduced Q1 2019

Delivers significant benefits to customers, including greater performance, increased flexibility and improved cycle times

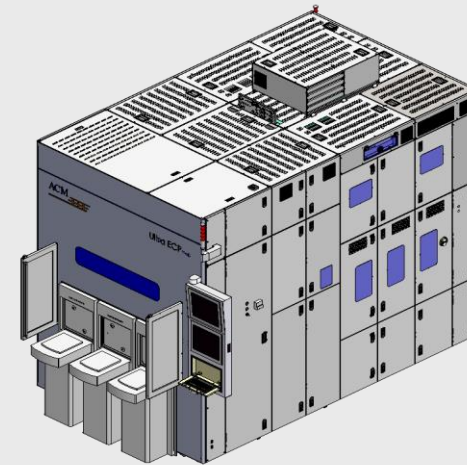
Ultra ECP AP



*Advanced Wafer Level Packaging
(Back-end Assembly Tool)*

- ✓ Back-end assembly tool used for applying copper, tin and nickel to wafers at the die level before packaging
- ✓ Produces uniform and consistent results

Ultra ECP MAP

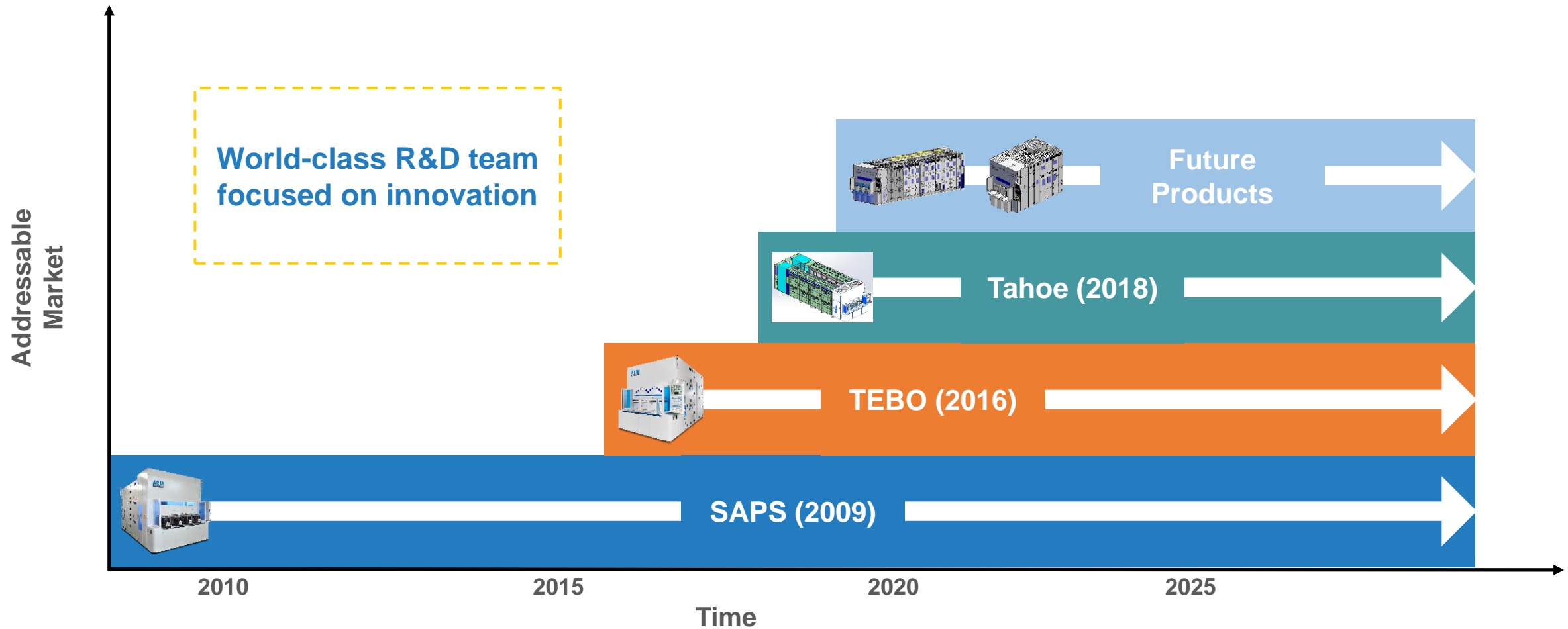


*Multi Anode Partial Plating
(Front-End Wafer Fabrication Processes)*

- ✓ Delivers world-class electrochemical copper plating for advanced copper interconnect applications
- ✓ Offers significant performance advantages relative to competitors

Innovation and Product Introductions Expanding Addressable Market

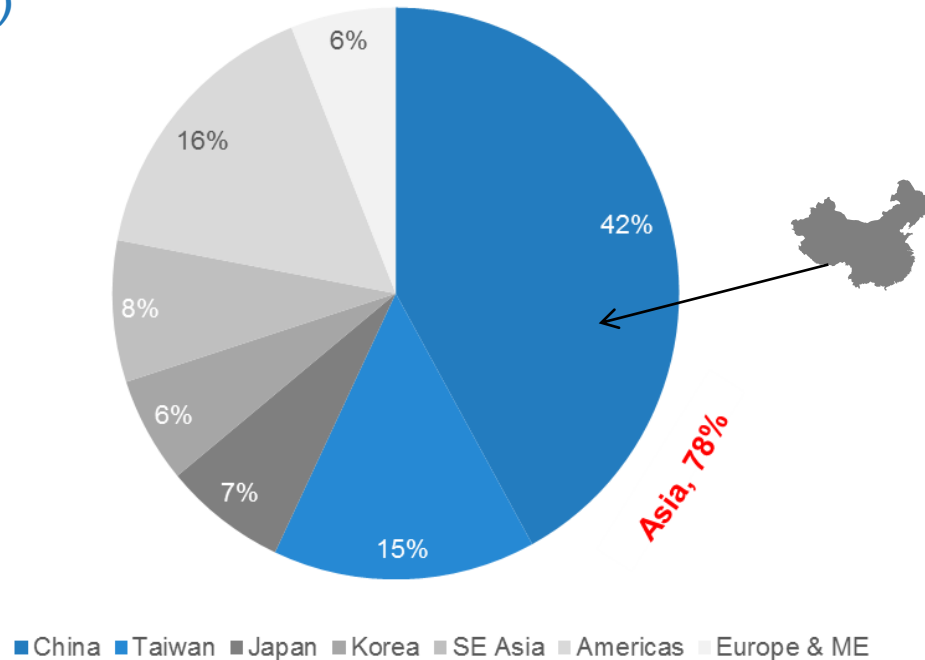
ACM projects that SAPS, TEBO, and Tahoe address more than 50% of the single-wafer wet cleaning market



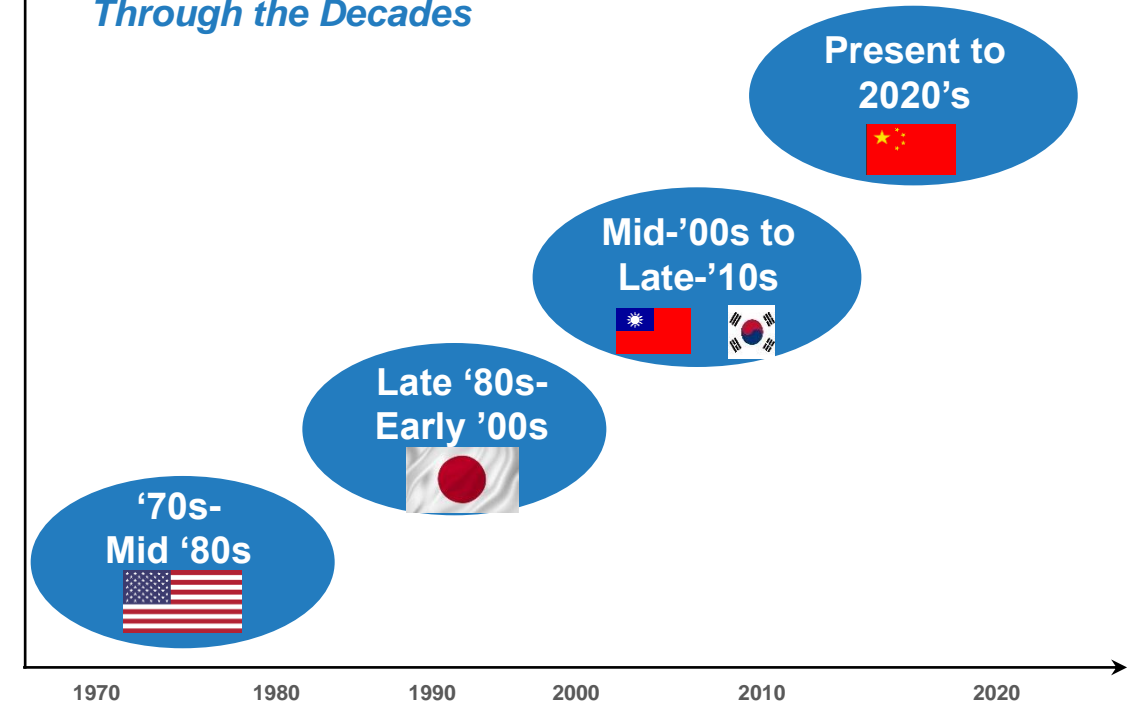
Well-Positioned to Participate in Asia Fab Investments

Semiconductor Industry Development

New Facilities and Production Lines Starting Operation (2017-2020)



Industry Center Shifts Through the Decades



Strong presence in Asia and close proximity to Chinese customers add to key competitive advantages.

Source: World Fab Forecast Report (November 2016, SEMI).

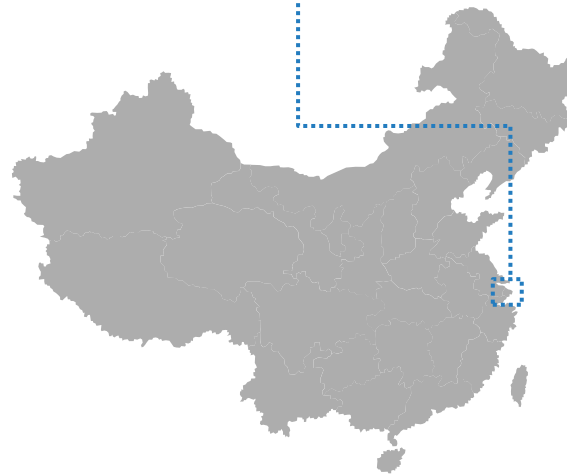
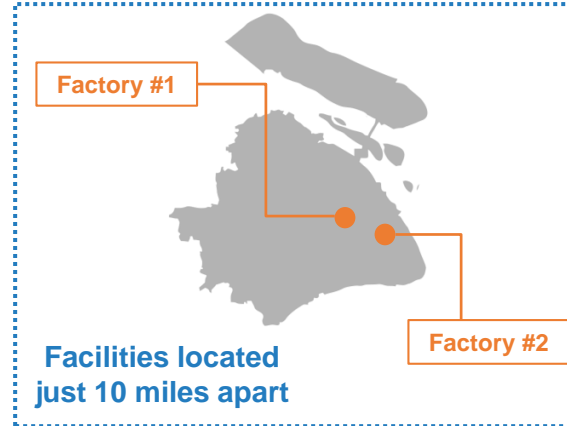
Shanghai Manufacturing Facilities

Factory #1 (Shanghai HQ)



- Original ACM factory
- 36,000 sq. ft. facility
- 8,000 sq. ft. of class 10,000 clean room space for product assembly and testing
- 800 sq. ft. of class 1 clean room space for product demonstration purposes
- Co-located with ACM Shanghai Headquarters and China R&D Center

Shanghai Locations



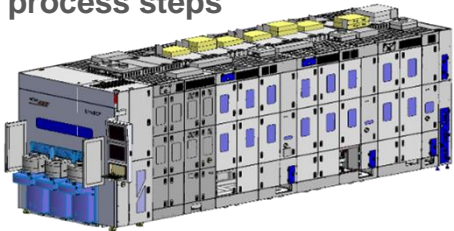
Facility #2



- Second factory; opened in September 2018
- 50,000 sq. ft. facility
- Shifting large portion of future production to this facility
- Additional dedicated space for product sub-assembly, component inventory and manufacturing related offices
- 2nd floor available for additional expansion

New Product Introductions Increasing TAM

- Next generation TEBO and Tahoe products expand SAM in wafer clean
- Front- and back-end plating tools offer growth opportunities in adjacent process steps



Continue to Build Scale in Asia

- Continue to gain meaningful share by offering differentiated, leading edge technology and localized service with fast-growing Asian-based customers



Add New Customers

- Megasonic approach driving meaningful engagement with Global Tier 1 foundry, logic and memory companies



Selective Acquisitions

- Use M&A to broaden product portfolio, add complementary technologies and increase access to the global market



Strategic Investment Plan – Access China’s Capital Markets

- Announced on June 17th, 2019
- Plan to list shares of ACM Research (Shanghai), Inc., the principal operating subsidiary of ACM Research, on Shanghai Exchange’s Sci-Tech innovAtion boARd (“STAR Market”)
 - ▶ Direct access to local capital to support China operations
 - ▶ Relatively attractive valuation vis-à-vis current NASDAQ trading prices for ACM Research common shares
 - ▶ Raise profile within the business and investment communities
- **\$27.3 million* private placement first step to qualify for STAR Market listing**
 - ▶ \$23.5 million* invested from third-party investors at **\$675 million*** pre-money valuation
 - ▶ Potential for STAR Market premium to enable significant capital raise at just 20% dilution
- **ACM Research remains committed to NASDAQ listing status and global market opportunities**

*Based on China RMB to US dollar exchange rate on 6/12/2019, the effective date of the agreement.

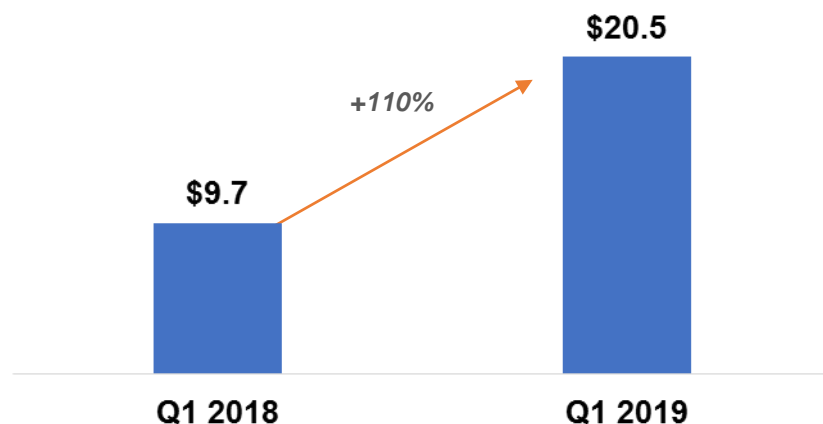
Q1 2019 Operating Highlights

- **Business Momentum Continued Despite Near-term Industry Challenges**
- **Solid Q1 Results**
 - \$20.5 million revenue, up 110% from Q1 2018
 - 43.1% GAAP gross margin and 11.0% GAAP operating margin
 - 43.2% non-GAAP gross margin and 14.6% non-GAAP operating margin
 - \$27.4 million cash balance at March 31, 2019
- **Total shipments of \$14 million in Q1 2019**
 - Increase of 40% from \$10 million in Q1 2018
- **Key operational progress:**
 - Delivered first Ultra-C Tahoe evaluation tool
 - Introduced two electro-plating products – Ultra ECP AP and Ultra ECP MAP
 - Production ramp at second factory on track

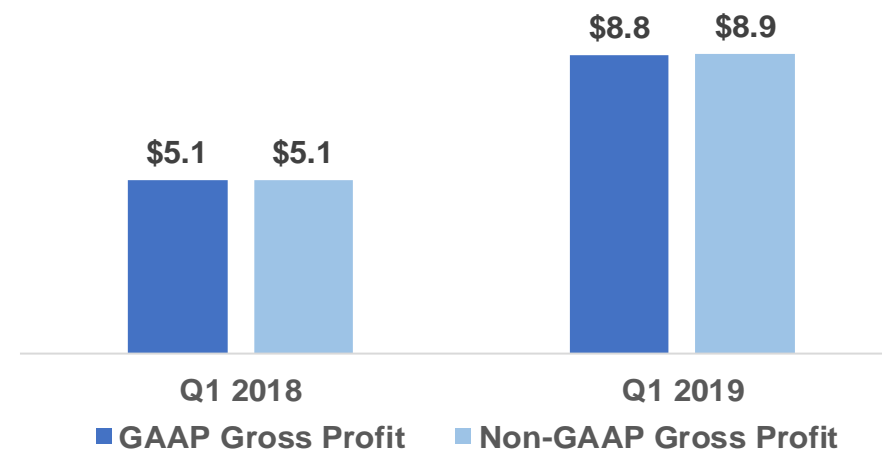
Q1'19 Financial Results

\$ Millions

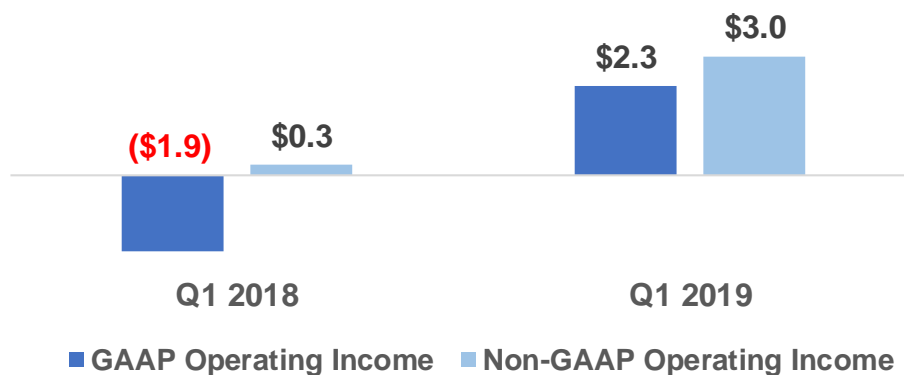
Revenue



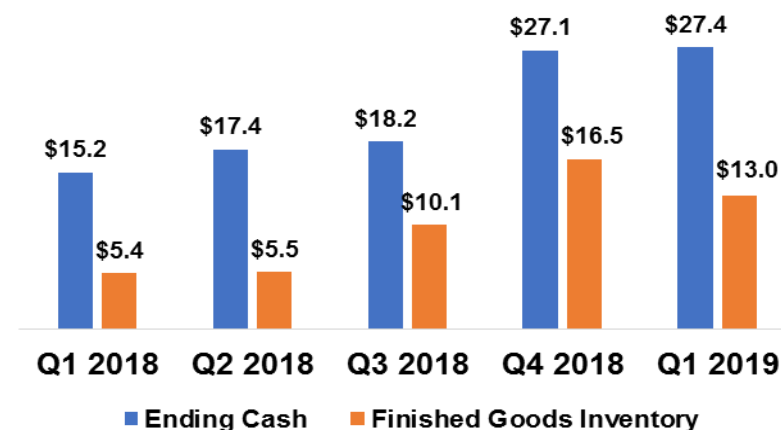
Gross Profit



Operating Profit











Balance Sheet Data



* Finished goods inventory represents 'demo-to-sales' product which have been delivered to customers for evaluation. These products are carried at cost until ownership is transferred.

Appendix – Non-GAAP to GAAP Reconciliations

	Three Months Ended March 31,					
	2019			2018		
	Actual (GAAP)	SBC	Adjusted (Non-GAAP)	Actual (GAAP)	SBC	Adjusted (Non-GAAP)
	<i>(in thousands)</i>					
Revenue	\$20,479	\$ -	\$ 20,479	\$9,743	\$ -	\$ 9,743
Cost of revenue	(11,653)	(30)	(11,623)	(4,621)	(8)	(4,613)
Gross profit	8,826	(30)	8,856	5,122	(8)	5,130
Operating expenses:						
Sales and marketing	(1,869) 	(34)	(1,835)	(1,855) 	(34)	(1,821)
Research and development	(2,765) 	(86)	(2,679)	(1,541) 	(27)	(1,514)
General and administrative	(1,941) 	(594)	(1,347)	(3,630) 	(2,106)	(1,524)
Income (Loss) from operations	\$ 2,251	\$ (744) 	\$ 2,995	\$ (1,904)	\$ (2,175) 	\$ 271
Net income (loss)	\$ 1,857	\$ (744)	\$ 2,601	\$ (2,780)	\$ (2,175)	\$ (605)