December 10, 2019

Company Name: ACLS

Michael Carman

Sector: Information Technology
Industry: Semiconductor
Current Price: $22.72
Target Price: $28.00

Company Description: Axcelis Technologies, Inc. designs, manufactures and services ion implantation and other processing equipment used in the fabrication of semiconductor chips. Their family of products offers the most innovative implanters available on the market today. Axcelis sell to leading semiconductor chip manufacturers worldwide.

BUY/HOLD/SELL

Current Price:	$22.72
Target Price:	$28.00
Market Cap:	$734.99 Mil
Beta:	1.37

Other key Metrics:

- P/E ratio: 49.16
- Daily Volume: 120,000
- Short Interest: 3.43%

Thesis: I am initiating coverage of Axcelis Technologies, with a buy at market price of $22.72 and a target price of $28. I view ALCS as a global leader in technology development and manufacturing of ion implant systems and services for the semiconductor industry. I believe that will receive a major increase in revenues due to the increasing technology regarding 5G. ALCS has had a history of meeting earnings as well as innovating products to meet the needs of their customers.

Catalysts: Forward looking projections that call for positive/negative outlook that will strengthen my thesis.

- Integration of Purion Product Line
- Increase in 5G technology
- Axcelis' niche in the ion implantation industry

Earnings Performance:

Axcelis reported revenue in the third quarter of $69.5 million, which was in line with guidance. Earnings per share of $0.02 was above the midpoint of guidance and well above consensus of -$0.02. Gross margins of 44% were above guidance driven by a significant mix of Purion product extensions. Backlog in the third quater, including deferred revenue finished at $93.4 million compared to $36 million in quarter two. The third quarter combined SG&A and R&D spending was $28.7 million or 41% of revenue compared to $29.7 million or 40% in the second quarter. SG&A in the quarter was $15.8 million with R&D at $12.9 million. Axcelis third quarter financial performance marked their 20th consecutive quarter of profitability.

Section 1: Ion Implantation Process

As mobile electronic devices get smaller and smarter, manufacturers of advanced logic semiconductors must produce high-performance, sub-10nm logic chips in ever-increasing quantities. To compete effectively for lucrative advanced logic opportunities, manufacturers must overcome a number of technical challenges. Manufactures must reduce contact resistance, ensure defect-free epitaxy and minimize particle contamination. The solution for these challenges is through Ion Implantation of semiconductors carried out by Axcelis Technologies. A process common practice in Ion Implantation is known as doping. Doping or otherwise modifying silicon and other semiconductor wafers relies on the technology, which involves generating an ion beam and steering it into the substrate so that the ions come to rest beneath the surface. Ions may be allowed to travel through a beam line at the energy at which they were extracted from a source material.

Section 2: Ion Implantation & 5G Technology

AS 5G application ramp up, it increases the ability to get data from one point to another much faster which means you tend to increase storage and analytical capability and so forth in addition to all of the communication devices that they are involved. So, Axcelis will see a gradual ramp up over the next few years. Without ion implantation, the chips couldn't process data at such a rapid speed, making Axcelis a staple in the 5G revolution due to the demand for more efficient chips. In September, the company announced the addition of three new Purion ion implanter products that feature enabling technology for several emerging markets.

Section 3: Increase in 5G

By 2035, 5G will enable $1.3 to $1.9 trillion worth of economic output—in the United States alone. That's nearly the same sum that U.S. consumers spent on automobiles in 2016.Innovations enabled by 5G, including augmented reality, mission-critical services, fixed wireless access and the massive internet of things will drive this increase in economic activity. All these developments will require billions of dollars' worth of semiconductors to implement.

The leading vendors in the 5G market have invested in high-quality technology and processes to develop leading edge monitoring and digital triggering activation capability. 5G is the most disruptive force seen in centuries. 5G Market are going from $31 billion in 2020 to $11 trillion by 2026. Following a 12.8 plunge in 2019, global semiconductor market revenue will rebound to 5.9 percent growth in 2020—an 18-percentage point swing—according to IHS Markit | Technology, now a part of Informa Tech. Global revenue will rise to $448 billion next year, up from $422.8 billion in 2019. The deployment of 5G will be the main factor propelling this recovery—not only because of the renewed growth it will bring to the wireless industry—but also due to the wider benefits the wireless technology will bestow on global businesses and economies. This rise will boost semiconductor market revenue driven by the smartphone industry, with chip sales to this segment increasing by 7 percent in 2020, following a 22 percent drop in 2019.

Section 4: Purion Market Penetration

At Axcelis' Investor Day in September, they introduced several new product extensions to the Purion family. All of the new Purion products focus on Axcelis' customers' most challenging ion implant processes and were developed in close collaboration with customers. The new products were built on the common Purion platform, using concurrent product development methodology. This approach enables new products to come to market with higher quality and lower initial costs. The new products all target high-value implant challenges for customers and as a result have higher ASPs than base Purion products. The new products include, Purion H200, a high current implanter designed to provide a comprehensive solution for high dose, higher energy applications in power device manufacturing. Purion Dragon revolutionary new high current implanter architecture, featuring innovative orthogonal beam optics, designed for advanced memory and logic applications. And, Purion XEmax high energy implanter, featuring patented Boost Technology, designed for the most advanced image sensor applications. All Purion ion implanters are based on a high-performance common platform, which enables Axcelis to leverage innovative designs that enable R&D across all product lines more efficiently and cost effectively, and provides customers with the best technology.

Section 5: Possible Risks/Short

If semiconductor chip manufacturers do not make sufficient capital expenditures, sales and profitability will be harmed. New systems orders and used tool sales depend upon demand from semiconductor chip manufacturers who build or expand fabrication facilities. When the rate of construction or expansion of fabrication facilities declines, demand for Axcelis' systems will decline, reducing revenue. In addition, all or a portion of the demand for increased capacity may be satisfied by a semiconductor chip manufacturer's ability to reconfigure and re-use equipment they already own.

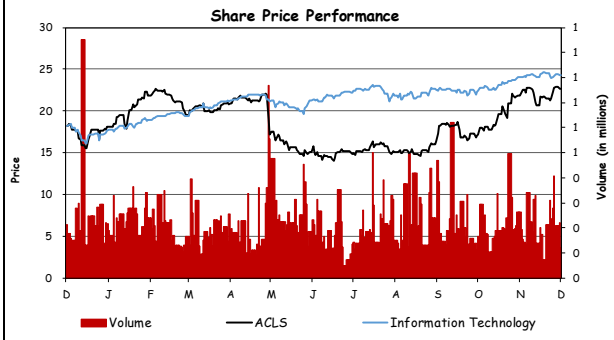
A significant portion of revenues depends on customers electing to buy aftermarket products and services from Axcelis. Historically, a significant portion of product revenue and all service revenue relates to the sale of "aftermarket" products and services, which include parts, consumables, upgrades, service contracts, and time and materials billings. Some customers purchase fewer aftermarket products and services, often training their own staff to maintain and service semiconductor capital equipment rather than relying on the equipment manufacturer for these services.

Axcelis is dependent on sales to a limited number of large customers; the loss of a significant customer or any reduction in orders from them could materially affect sales. Historically, Axcelis has sold a significant portion of their products and services to a limited number of semiconductor chip manufacturers. In 2018, their top ten customers accounted for 76.9% of net sales, in comparison to 73.3% and 70.2% in 2017 and 2016, respectively. The loss of a significant customer or any reduction or delays in orders from any significant customer will adversely affect them.

Conclusion:

In conclusion, I am initiating coverage of Axcelis Technologies, with a buy at market price of $22.72 and a target price of $28. ACLS will reap the benefits of a positive outlook on the explosive 5G technology industry. ACLS has shown that they have found themselves in the tiny ion implantation niche for semiconductors. They have been able to beat earnings on their last 20 business quarters and appear to have positioned themselves well to continue this trend well into the future.

Axcelis Technologies, Inc.	Symbol: ACLS
Analyst	Michael Carman
Buy below	$19.59
Sell above	$28.13
Probability of Price Increase	74%
Last Price	$22.72
Intrinsic Value	$22.51
Target Dividends	$0.00
Target Price	$24.49



Description

Axcelis Technologies, Inc. designs, manufactures, and services ion implantation and other processing equipment used in the fabrication of semiconductor chips worldwide.

Sector	Information Technology
Industry	Semiconductors and Semiconductor Equipment
Last Guidance	December 11, 2018
Next earnings date	January 31, 2020

People

Puma, Mary, CEO, President & Director
Brewer, Kevin, CFO & Executive VP of Global Operations
Bintz, William, Executive Vice President of Product Development
Aldeborgh, John, Executive Vice President of Global Customer Ope
Low, Russell, Executive Vice President of Engineering
Fallon, Lynnette, Executive VP of HR & Legal, General Counsel and

Top Competitors

Veeco Instruments Inc.	Brooks Automation, Inc.
Cohu, Inc.	Ultra Clean Holdings, Inc.
Onto Innovation Inc.	--
FormFactor, Inc.	--
--	Ichor Holdings, Ltd.

Market Statistics

Market Capitalization (mil)	$734.99
Last Price per share	$22.72
52 week high	$23.31
52-week low	$13.99
Volatility	42.65%
Daily volume (mil)	0.12
Short interest	3.43%
Days to cover short interest	4.95
Beta	2.63

Ownership		**Change in Ownership (over the past "Number" months)**
Shares outstanding (mil)	32.42	
Weighted Diluted shares outstanding (mil)	33.84	
Options and Warrants (Shares equivalent)	0.00	
% shares held by institutions	90%	"INPUT from BB"
% shares held by investments Managers	66%	"INPUT from BB"
% shares held by hedge funds	13.88%	"INPUT from BB"
% shares held by VC/PE firms	0.274%	"INPUT from BB"
% shares held by insiders	1.85%	-51.57%
Poison Pill and Type	Yes: Flip-Over Combined With Flip-In	

Financials

Profitability	**ACLS (LTM)**	**ACLS Historical**	**Peers' Median (LTM)**
Return on Capital	6.3%	1.38%	6.47%
Adjusted EBITDA Margin	11.4%	7.00%	12.74%
Return on Equity	4.7%	18.4%	9.8%
Adjusted Net margin	9.5%	16.2%	14.6%
Invested Funds	**ACLS (LTM)**	**ACLS Historical**	**Peers' Median (LTM)**
Cash/Capital	28.8%	19.0%	19.2%
NWC/Capital	22.7%	19.2%	12.4%
Operating Assets/Capital	48.4%	59.4%	41.0%
Goodwill/Capital	0.0%	0.0%	20.3%
Capital Structure	**ACLS (LTM)**	**ACLS Historical**	**Peers' Median (LTM)**
Total Debt/(Market Cap.+ Other Claims on Capital)	0.11	0.10	0.32
Minority Interest/(Market Cap.+ Other Claims on Capital)	0.0%	0.0%	0.0%
Preferred Equity/(Market Cap.+ Other Claims on Capital)	0.0%	0.0%	0.0%
CGFS Credit Rating	CCC		CCC
Credit Rating Model	b+ to bb-		b+ to bb-
Probability of Default Model	bbb to bbb+		bbb-
Likely Current Cost of Debt	10.07%		4.56%
Likely Current Cost of Equity (Cost of Debt + MRP)	16.29%		10.78%
Likely Current WACC	15.49%		9.1%

Quarterly Earning Surprises (Actual/Median Estimates)

Revenue	**Last 5 quarters**
9/30/2018	$381.496 (-2.2%)
12/31/2018	$422.732 (5.7%)
3/31/2019	$365.908 (-1.1%)
6/30/2019	$297.22 (-0.9%)
9/30/2019	$277.812 (-1.1%)
History:	**Last 10 years**
Mean Surprise	0.57%
99th percentile "surprise" range	-7% to 8%
EBITDA	**Last 5 quarters**
9/30/2018	#DIV/0!
12/31/2018	$49.26 (9%)
3/31/2019	#DIV/0!
6/30/2019	#DIV/0!
9/30/2019	#DIV/0!
History:	**Last 10 years**
Mean Surprise	-6.83%
99th percentile "surprise" range	-77% to 63%

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Target Price	$24.49

Cost of Capital Estimates

	CGFS Credit Rating	Credit Rating Model	Probability of Default ModelModel
Implied Cost of Borrowing (ACLS)	5.1%	5.7%	4.4%
Implied Cost of Borrowing (Peers)	5.1%	5.8%	4.7%

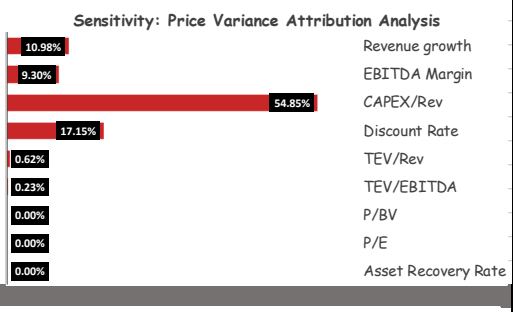
	Base Year	Explicit Period (15 years)	Continuing Period
Cost of New Debt Estimate	10.10%	4.92%	4.92%
Country Risk Premium Estimate	6.22%	6.22%	6.22%
Cost of Equity Estimate	16.32%	11.14%	11.14%
WACC Estimate	15.77%	10.66%	10.66%

Forecast Assumptions

Fiscal Year	Revenue Growth	EBITDA Margin	CAPEX/Revenue	DPR/CAPEX	Other	
Base Year (Actual)	8.18%	**16.7%**	1.1%	0.67	SBC/Revenue	2.44%
year 1	-24.21%	**8.4%**	1.1%	0.69		Constant/same as LTM
year 2	25.17%	**12.7%**	1.1%	0.71	Lease term	10
year 3	15.54%	**18.1%**	1.1%	0.73	Rent Expense/Revenue	1.50%
year 4	14.53%	**17.7%**	1.0%	0.75		Tappers off to historical average
year 5	13.53%	**17.3%**	1.0%	0.78	R&D life	10
year 6	12.53%	**16.8%**	1.0%	0.80	R&D Expense/Revenue	11.72%
year 7	11.53%	**16.4%**	1.0%	0.82		Constant/same as LTM
year 8	10.52%	**16.0%**	1.0%	0.84	LIFO Reserve	Tappers off to zero
year 9	9.52%	**15.5%**	1.0%	0.86	Non-operating pension costs	Tappers off to zero
year 10	8.52%	**15.1%**	1.0%	0.88	Net financing pensions costs	Tappers off to zero
year 11	7.51%	**14.7%**	1.0%	0.90	Overfunded pension plans	Tappers off to zero
year 12	6.51%	**14.2%**	1.0%	0.92	Capitalized interests	Constant/same as LTM
year 13	5.51%	**13.8%**	1.0%	0.94	Dividends/Revenue	0.00%
year 14	4.51%	**13.4%**	1.0%	0.96	Tax Rate	17.11%
year 15	3.50%	**12.5%**	1.0%	0.98		
Continuing Period	2.50%	**12.5%**	1%	1.00		

Simulation Assumptions

Random Variables	Distribution Assumption	MAX	Likelly	MIN
Deviations in annual Revenue Growth--Expl. Per.	Triangular	8.25%	0%	-2.35%
Deviations in annual Revenue Growth --Cont. Per.	Normal	1.41%	0%	-1.41%
Deviations from EBITDA Margin base annual estimates	Triangular	10.59%	0%	-3.32%
Deviations from CAPEX/Revenue base annual estimates	Triangular	2.16%	0%	-0.03%
Deviations from Kd base annual estimates	Triangular	5.41%	0%	-1.76%
Deviations from CRP base annual estimates	Triangular	1.82%	0%	-1.92%
Deviations from TEV/Revenue base estimate	Triangular	1.29	0%	-0.67
Deviations from TEV/Revenue base estimate	Triangular	2.14	0%	-3.44
Change in P/BV (TTM)	Triangular	0.83	0%	-0.94
Change in P/E (FW)	Triangular	8.80	0%	-8.61
Recovery Rate	Triangular	10.00%	0%	-10%



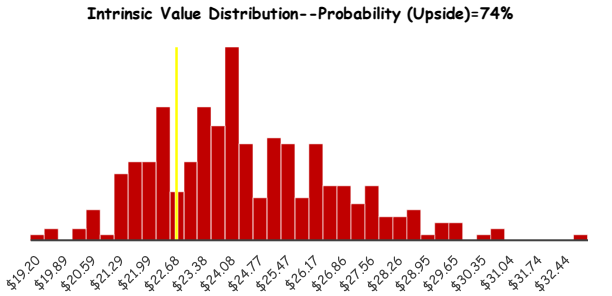
Valuation

DCF Valuation

	Base	Explicit Period (Average)	Continuing Period
Revenues	$340.92	$649.04	$1,072.98
EBITDA Margin	11%	15%	13%
UFCF	$31.89	$72.17	$107.36
WACC	15.77%	10.66%	10.66%
ROIC	6.33%	10.67%	9.96%

Relative Valuation

	Median Justified Multiple	Basis	Implied Equity Value
EV/Rev (FW)	1.6x	$271.76	$521.20
EV/EBITDA (FW)	13.2x	$25.55	$412.90
P/BV (TTM)	2.5x	$825.47	$2,072.51
P/E (FW)	23.1x	$8.09	$187.21



Asset Based Valuation

Recovery Rate	60%
Capital	$893.59
Intangibles	$0.00
Claims	$72.30
Implied Equity Value	$463.86

Valuation Summary	Intrinsic Value	Target Price	Model Weight
DCF Valuation	$ 25.17	$ 27.10	80%
EV/Rev (FW)	$ 15.40	$ 17.83	10%
EV/EBITDA (FW)	$ 12.20	$ 14.12	10%
P/BV (TTM)	$ 61.24	$ 70.89	0%
P/E (FW)	$ 5.53	$ 6.40	0%
Asset Based Valuation	$ 13.71	$ 15.87	0%
Price per Share	$ 22.90	$ 24.88	100%