

AXT

A Material Science Company

Needham 24th Annual Growth Conference
January 12, 2022



Legal Disclosure



PLEASE SEE ADDITIONAL RISK FACTORS ON FORM 10-Q AND FORM 10-K FILED BY AXT WITH THE SEC

This presentation includes forward-looking statements about the Company's business, operations, financial outlook, sales, customers, utilizing our new manufacturing sites, customer needs, life cycles of our products and applications, our partially owned raw material companies and other matters. In addition, completing the steps in connection with the proposed listing of shares of Tongmei on the STAR Market, being accepted to list shares of Tongmei on the STAR Market and the timing and completion of such listing of shares of Tongmei on the STAR Market are each considered forward-looking statements. Forward-looking statements are subject to risks and uncertainties and our actual results could differ materially from what is described. In addition to the risks associated with developing complex technology, our future results will depend on factors including: the impact of COVID-19; the timing and receipt of significant orders; the cancellation of orders and return of product; emerging applications using chips from our substrates; efficiently utilizing our new manufacturing sites, complying with the growing environmental, health and safety and the chemical regulations in China; end-user acceptance of products containing chips using our substrates; our ability to bring new products to market; product announcements by our competitors; the ability to control costs and improve efficiency; cancellations of orders; the withdrawal, cancellations or requests for redemptions by private equity funds in China of investments in Tongmei; the administrative challenges in satisfying the requirements of various government agencies in China in connection with the investments in Tongmei and the listing of shares of Tongmei on the STAR Market; continued open access to companies to list shares on the STAR Market; investor enthusiasm for new listings of shares on the STAR Market; geopolitical tensions between China and the United States; and other factors. For further discussion of risks and uncertainties please see the Company's most recent Form 10-K and Form 10-Q filings.



AXT Snapshot



- **History:** Founded in 1986; IPO in 1998
- **Products:** Alternative wafers when silicon will not work
- **Process Technology:** Pioneered Vertical Gradient Freeze (VGF) crystal growth; substantial process technology and IP
- **Facility:** Headquarters in Fremont, CA; strong presence in China
- **Launched** in China in 1998. Operating in three locations:
 - Beijing – Indium phosphide crystal and wafer processing, R&D, Sales & Mktg, Admin
 - Kazuo – Gallium arsenide crystal growth; also two raw material companies
 - Dingxing – Gallium arsenide and germanium wafer processing
- **Operations:** Sophisticated supply chain model, ownership in 10 raw material companies



AXT's Business



- Grow single crystal ingots from special earth materials
 - Successfully applied VGF to GaAs, InP and Ge
- Convert to wafers, ready for epitaxial next step
- Sell to epitaxial foundries or chip fabrication companies
 - Diverse customer base, no 10%ers first 3 Qtrs of 2021
- Specialized chip or optical device then used in a product

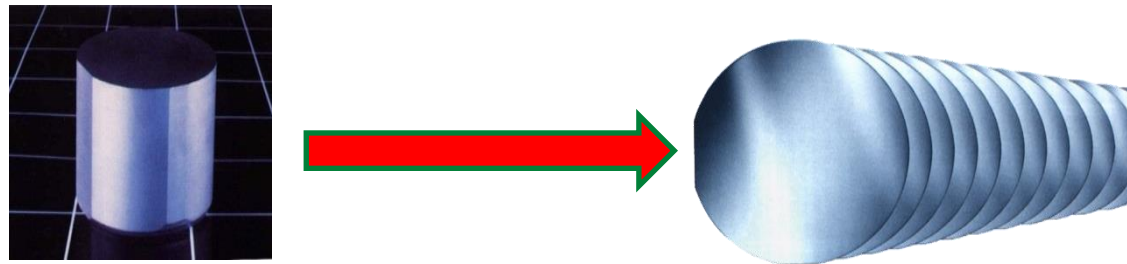


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Complex Processes



- Crystal growth demands strict technical specs
 - InP growth must control both temp and pressure
 - GaAs low EPD requires difficult temp control
- Conversion to wafers sensitive to wafer handling
 - Wafer process technology proprietary to AXT
- Deep expertise in material science is required to support increasingly complex requirements; no EEs



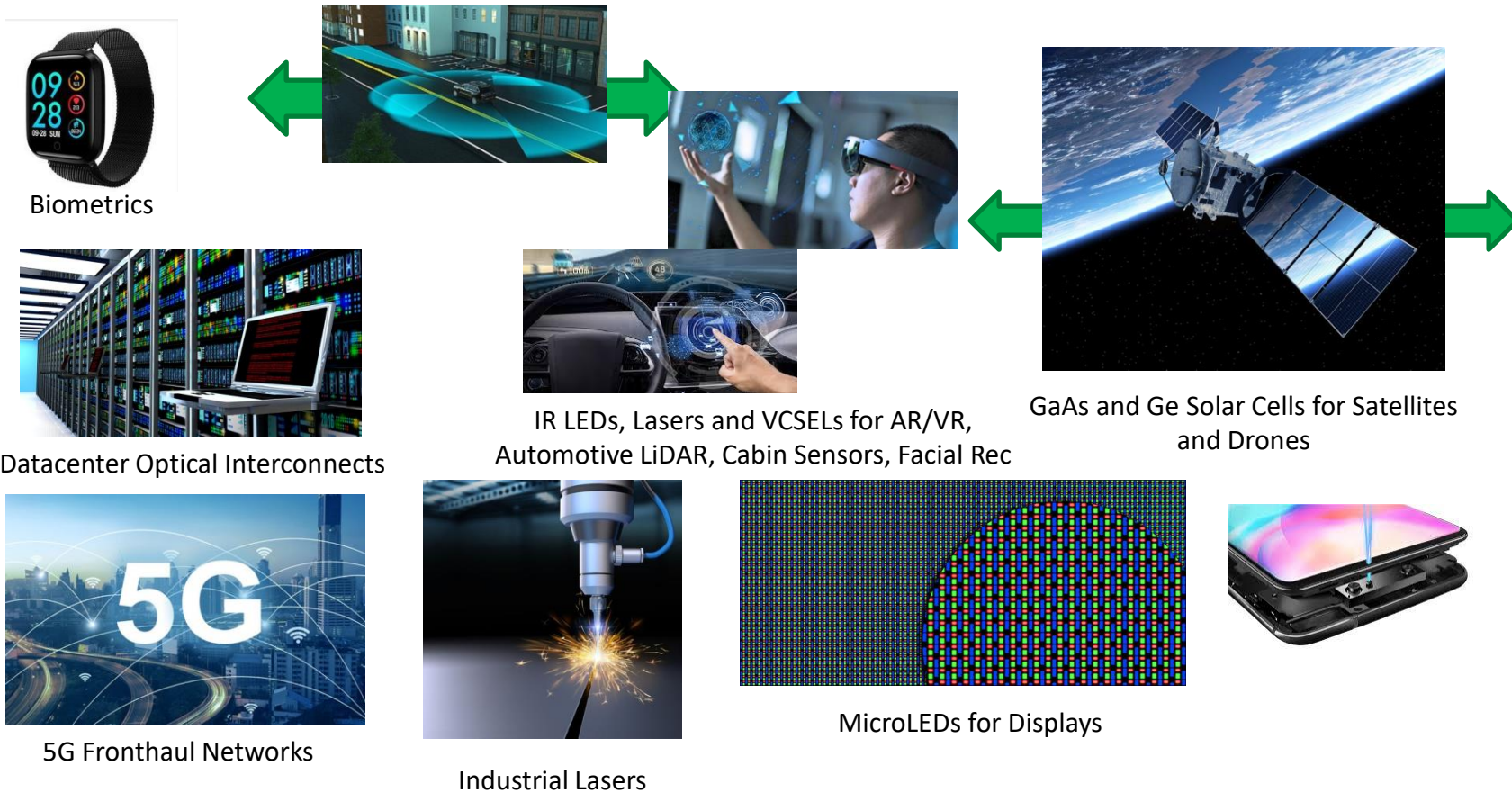
Market Growth Areas



InP

GaAs

Ge





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Indium Phosphide (InP) Market



- Growth engine ignited in 2014
- Applications using InP are expanding
- We expect a long product life cycle—mirroring GaAs

Key Applications

- Data center connectivity (Silicon photonics)
- Passive Optical Networks (PONs)
- 5G telecommunications infrastructure
- Emerging market for medical sensors
- Metaverse sensors
- Upside – 5G mobile devices
- Upside – driverless cars

Market Dynamics

- Strong barriers to entry
 - Crystal growth very difficult due to two key variables
 - Customer spec-driven market
- Three leading suppliers:
 - AXT, Sumitomo, and Japan Energy
- AXT is strategically adding capacity



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Gallium Arsenide (GaAs) Market



- Our first strong growth engine, even before our IPO in 1998
- A long product life cycle populated with new applications
- Pacesetter in developing crystal & wafer process technology

Key Applications

- LED lighting
- Industrial lasers
- Printer heads
- Power amplifiers
- 3-D sensing
- MicroLEDs

Market Dynamics

- Market pushes wafer size
- Tier-one requires very low defect density (EPD)
- Consumer applications mean high volume
- GaAs not going away, keeps re-inventing itself—MicroLEDs on horizon
- New opportunities developing
- Limited competitive landscape:
 - AXT, Sumitomo, Freiberger



Germanium (Ge) Market



- A single element wafer i.e. just Germanium
- Primary application is satellite solar cells:
 - Multi-junction solar cells
 - Weather, environmental, communication
- Market Dynamics:
 - Satellites increasingly in the news
 - Satellite solar cell market increasing
 - Difficult to make house calls
 - Difficult for customer to change supplier
 - AXT has strong relationships with multiple leading customers



Strong Revenue Momentum



	<u>2021</u>	<u>2021</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
(\$ in M)	<u>Q3</u>	<u>Q2</u>	<u>Q1</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>	<u>FY</u>
Revenue	\$34.58	\$33.70	\$31.40	\$95.40	\$83.30	\$102.40	\$98.70
Gross Margin %	33.30%	36.30%	36.80%	31.70%	29.80%	36.10%	34.90%
Op Expense	\$9.10	\$8.30	\$8.00	\$26.30	\$25.10	\$24.90	\$21.80
Op Ex after eliminating one time item	\$8.58						
Net Profit/(Loss)	\$3.80	\$4.40	\$3.40	\$3.20	(\$2.60)	\$9.70	\$10.10



Sophisticated Supply Chain



AXT's Beijing facility

- Ownership interest in ten raw material companies in China
- Merged two jewels into Beijing Tongmei Xtal Technology Co., Ltd. (“Tongmei”)
- Direct visibility and influence in these markets
- Favorable cost/pricing
- A risk minimization strategy if supply shortages occur
- **Unique advantage if customers are concerned about sourcing**
- On the boards of all ten raw material companies
- AXT is uniquely positioned to secure key materials



STAR Market Listing Announcement



- Announced Jan 10 that our filing has been accepted for review
- Separate listing of Tongmei, no change regarding the current Nasdaq listing of AXTI
- A convergence of factors:
 - The Shanghai Stock Exchange’s “STAR Market” is now allowing the listing of foreign-owned entities
 - The STAR Market’s focus is technology companies, including semiconductors & materials
 - Completion in 2020 of relocation of gallium arsenide manufacturing to Kazuo and Dingxing
 - AXT’s well-established presence in China: 20+ years and 1,350+ employees
 - IPO plan enhances our reputation at the local and provincial level



Why Is Valuation Higher



- STAR focus: Technology, semiconductors and materials. We check all three.
- Longevity is respected. 1998 a first step
 - Now unlocking a valuable asset (investor called “hidden asset”)
- Manufacturing is respected and we are a unique kind of manufacturing company
- Ten raw material companies, began as early as year 2000
- The combined company now has over 1,350 employees
 - All but a few are Chinese citizens, paying China income taxes
- End markets are currently visible and well understood
 - Micro-LED viewed with higher surety in Asia than in U.S.



Benefits



- Our shareholders
 - Attractive Balance Sheet, minimal dilution
 - Displays and leverages impressive China assets
 - Strengthens AXT's Business Development positioning
- Our customers
 - Increases confidence in our ability to scale up
 - Confirms our commitment to their projects and to winning bz
- Our employees
 - Creates excitement, pride and financial opportunity
 - Strengthens retention, motivation and commitment to excellence

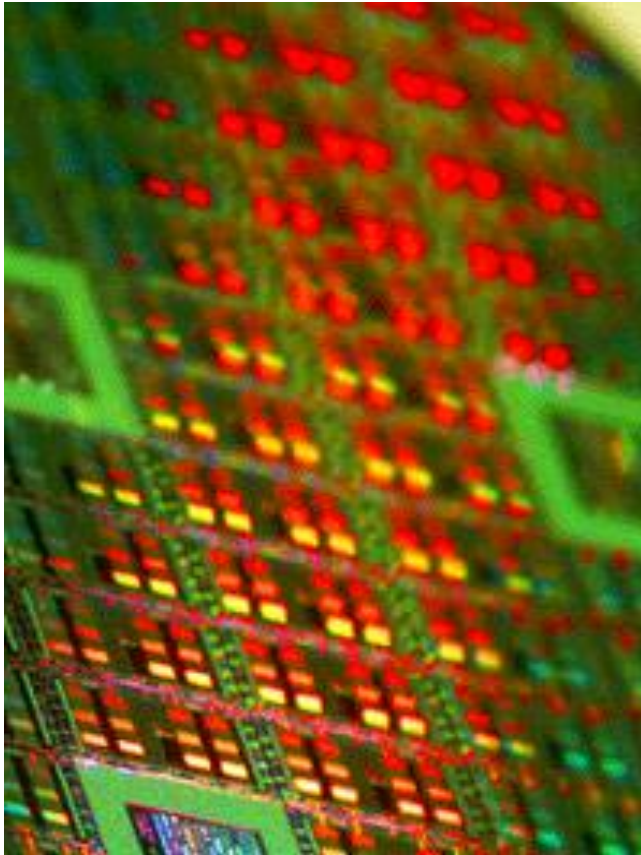


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AXT Competitive Advantages



- A pure-play provider with staying power
- InP has lowest defect density (EPD)
 - InP has high barriers to entry
- LED market growing, needs low EPD
- Low EPD GaAs has high barriers to entry
 - Osram and LED lighting
 - 3D sensing and future micro-LED
- Proven ability to add capacity when needed; clear we have invested
- Proprietary process technology, barriers to entry
- Material science a barrier to entry, not a software company
- Access to capital in two countries; U.S. quality standards; China cost structure
- Supply chain strategy unique and developed over 20 years



Thank You