Rayton, headquartered in Los Angeles, CA and incorporated in Delaware in 2013 as Rayton Solar, Inc., is a development-stage manufacturer of low-cost, ultra-thin Gallium Arsenide ("GaAs") wafers for the semiconductor industry, which has transitioned from solar energy. As the properties of inexpensive traditional silicon-based microchips prove increasingly insufficient for many high-speed, high-power radio-frequency electronics, GaAs epitaxial wafers serve as the emerging foundation for components used in automotive, aerospace, 5G, LED and solar applications, despite acutely higher materials costs of up to three-fifths in magnitude. Capitalizing on its patented, particle accelerator-based ion implantation technology, co-engineered with Phoenix Nuclear Labs, LLC, a Wisconsin-based nuclear technology company known for making the strongest compact neutron generators in the world, Rayton is conducting a Title III Regulation Crowdfunding campaign to raise up to $1.07 million to support its beta-phase production of GaAs wafer samples marketable to epitaxy foundries. Rayton previously raised $8.2M for the Company, which brought it through the early stages of R&D and the company recently raised an additional $520,000 via a Crowdfunding Title III offering.

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Rayton’s unique fabrication process, which was awarded two patents in 2016, utilizes a high-current, high-voltage proton particle accelerator to slice semiconductor wafers, drastically reducing materials waste and wafer thickness to just 2 microns, versus norms often exceeding even 200 microns. The Company’s ground-breaking accelerator concept aimed at retiring the prevailing standard of wasteful diamond wire saws was featured by numerous reputable media outlets, including Forbes and Fast Company. Although initially developed to produce silicon photovoltaic modules, the technology can be applied to GaAs wafers, as well as other less-conventional new-generation semiconductors, such as gallium nitride (GaN) or silicon carbide (SiC).

Accelerated protons are implanted a few microns deep into a GaAs wafer (I.), which is subsequently bonded to a less expensive, compatible carrier wafer, such as sapphire and (II.), then finally exfoliated together with the carrier wafer through thermal annealing. As such, a typical original GaAs wafer can be reused producing over 100 engineered wafers consisting of exfoliated 2-microns-thick outer surface GaAs layer on a sapphire carrier.

The Company’s founder, CEO and Chairman, Andrew Yakub, who was named on Forbes’ “30 Under 30” list in 2016, with experience at UCLA’s Particle Beam Physics Lab, has assembled a strong team of scientists to oversee the fruition of his vision. Among the members are other notable UCLA-connected experts, including Dr. Mark Goorsky, an MIT Ph.D., who is currently a UCLA professor and a former UCLA Materials Science Chair and Rayton’s resident expert in ion implantation, layer transfer, wafer bonding and material integration, as well as Dr. James Rosenzweig, a world-renowned researcher in particle beams with over 500 scientific publications, who is also a UCLA professor and former UCLA Physics and Astronomy Department Chair.
Rayton's operating strategy centers on applying its proprietary process to GaAs wafers purchased in bulk from producers like Xinxiang Shenzhou Crystal Technologies Co., Freiberger Compound Materials GmbH, Sumitomo Electric and AXT, Inc. (Nasdaq: AXTI) and selling the Rayton-engineered substrates to epitaxy foundries like VPEC and IQE, which sell them to chipmakers for placement with retail electronics manufacturers.

The Company strives for a cost-reducing positioning within the supply chain of a burgeoning GaAs wafer industry, which according to a July 2018 'GaAs Wafer & Epiwafer Market: RF, Photonics, LED and PV applications' report from Yole Développement is expected to grow at 15% CAGR to 2023, exceeding 4.2 million units, or $630 million.

Having raised over $8.2 million from over 4,000 investors in various Regulation A and Regulation D debt and equity placements since 2017, Rayton is currently offering up to $1.07 million of Convertible Promissory Notes via a StartEngine Crowdfunding campaign.

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Dependent on making the final payment of $954 thousand on the particle accelerator equipment, the Company expects to advance its beta phase production testing and secure a full proof-of-concept of the GaAs wafer fabrication process, allowing for commencement of marketing activities.

Assuming successful sales efforts based on the beta phase wafer samples, the Company will need to raise approximately $14 million to buy additional semiconductor processing equipment required to move into a high volume manufacturing of 25 wafers per hour, estimated to yield $9 million in annual revenue from 120,000 wafers, and then additional $25 million to maximize the throughput of the first production line at the level of 90 wafers per hour, generating $32 million annually on 432,000 wafers sold.

Provided successful achievement of profitable high-volume production levels, Rayton could play a vital role in expediting the growth of 5G infrastructure and cellular technology, advanced automotive and aerospace electronics, solar cells and more. A 246-page industry report “5G: Market Shares, Strategy, and Forecasts, Worldwide, 2020 to 2026” just released by WinterGreen Research, predicts the 5G markets to multiply from $31 billion in 2020 to $11 trillion by 2026.

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