Press Release

Singapore's IGaN greenlights Epi Centre project in niche semicon tech for power efficiency and smart city applications with US$73mil commitment

- Firm to establish Gallium Nitride (GaN) ecosystem and capitalise growing demand for next-gen semiconductor solutions in power and renewable energy, 5G, wireless communications and data centres
- Nation is at the cusp of becoming Asia's epicentre in power efficiencies, further enabling industry's competitive advantage and technology advancement in smart city solutions
- To be operationalised mid-2021, centre's collaboration with customers, universities, research institutes and tool vendors in GaN development to drive lower cost barriers

Singapore, 1 Sept 2020 – Singapore-based IGSS GaN Pte.Ltd (IGaN), an internationally-recognised technology developer and commercialisation experts in gallium nitride-on-silicon/silicon carbide (GaN-on-Si/SiC), furthers its expansion initiatives following demonstrated successes in pilot lines of customers. Fuelling the company's GaN tech ambitions, the combined commercial and Global Joint Lab for GaN Epi Centre in Singapore looks to address mass commercialisation challenges of a niche semiconductor technology billed as the alternative to silicon today.

IGaN, its holding company IGSS Ventures (IGSSV), and select partners have committed to investing some US$73mil which comes on the heels of the recent onboarding of a renowned toolmaker. Operationalisation of the GaN Epi Centre is envisioned for mid-2021 and is poised to expand GaN epi production capacity and the mass production 8" GaN fabrication technologies.

GaN fulfils two key criteria: improving output power while keeping costs and energy consumption low simultaneously – creating a "green network" effect that extends to high-growth use-case areas and sustainability demands. High-growth areas include new applications and next-generation technologies like power and renewable energy, 5G, wireless communication, and data centres – which require high switching frequencies, efficient energy management and the ability to perform under high power densities.

Poised to accelerate "green goals" across Asia-Pacific, from China to Singapore-Malaysia to India, GaN technology is increasingly sought after by industry players looking to address public and private sector efforts in decarbonising digitalisation, energy distribution and mobility. To serve market needs, GaN manufacturers need to offer several variations that span a broad range of frequencies and power levels.

Designed to serve a market looking for 4" - 8" epiwafer production, the Epi Centre brings together customers, universities, research institutes (RIs) and tool vendors to collaborate in the future development of GaN technologies. Today, the quality of epiwafers are critical to GaN device manufacturing such as mobile, sensors, chargers, batteries, telecom base stations and satellite-based applications, says Raj Kumar, IGaN's chief executive officer and founder of IGSSV.

"What the industry lacks today is a concerted effort to enhance the overall GaN ecosystem to lower cost barriers so that technology adoption can happen at the pace the market is moving. A commercial centre and Joint Lab hosting several top specialist brands and leading vendors is a timely market response to creating strategic partnerships that fast-track innovation, growth, and customer value. Creating the right balance between superior performances and cost competitiveness, the Epi Centre leverages the recognisable Singapore-brand, second to none IPs standards, its known semiconductor infrastructure. Backed by IGaN's in-house expertise, I truly believe we can set standards, create benchmarks and lead the global movement in GaN adoption," he stressed.

The company credits its roots in proprietary GaN-on-Si capabilities as the result of hundreds of millions of dollars of research by various RIs and University groups in Singapore over 14 years including Nanyang Technological University and Agency for Science, Technology and Research (A*STAR). IGaN itself subsequently spent six years perfecting the technology and going beyond its original licensing infrastructure - securing multiple partnerships focused on strengthening the company's capacity to supply industry-leading 8" GaN-on-Si epiwafers.

Raj adds, "The Epi Centre project reaffirms IGaN's efforts in establishing an innovative GaN ecosystem that supports global demand for an energy-efficient, sustainable and mobile future. In advancing unique GaN manufacturing technologies that can be adopted by existing silicon wafer fabs to produce high-volume and low-cost GaN products, Singapore can be Asia's flag-bearer in the global commercialisation of GaN technologies and drive the semiconductor industry's push in sustainable and inclusive smart city solutions."

This Epi Centre facility project represents another critical milestone for IGSS Ventures group, IGaN's holding company. The group's other subsidiary CompoundTek Pte. Ltd, has successfully launched a multi-million-dollar dedicated Silicon Photonics (SiPh) Testing Centre of Excellence early this year, billed as Southeast Asia's first-of-its-kind facility. The testing centre focuses on production and engineering test services accessible to commercial industry players.

Ambitions for the Epi Centre is indicative of the growing excitement in the industry as GaN technology sits at the intersection of power-efficient electronics, AI, 5G and IoT, charging systems/powertrain management, green energy and smart city demands. Spurring a wave of progress across several high-growth and mission-critical sectors such as consumer appliances, environmental monitoring, healthcare and automotive, GaN has unleashed unprecedented capabilities and new opportunities beyond the limits of existing technologies.

According to Transparency Market Research, the global GaN semiconductor devices market is expected to reach a valuation of ~US$4 billion by the end of 2027. Of the key end-use industries utilising GaN semiconductors, the aerospace and defence sector dominates, accounting for a share of over 42% of the global market in 2015 alone.

IGaN offers a 'one-stop solution' approach for GaN-on-Si epiwafers and GaN fab on 200mm platform with its automotive-qualified foundry partner, to provide solutions suited for power, radio frequency (RF), sensor products and sustainable energy management applications.

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About IGSS GaN Pte Ltd (IGaN)

IGaN is a Singapore-based technology developer and commercialisation experts in gallium nitride-on-silicon/silicon carbide (GaN-on-Si/SiC) epitaxial wafers and proprietary 8" (200mm) GaN fabrication technologies for niche power, radio frequency, and sensor applications. Our solutions drive global technology adoption and customers' commercialisation goals in cutting-edge applications spanning autonomous and electric vehicles (AV/EV), renewable energy, Light Detection and Ranging (LiDAR), 5G, high-performance sensors and Internet of Things (IoT). Apart from its in-house intellectual properties and know-how, IGaN has exclusivity of Singapore's A-STAR's GaN-on-Si patents/copyrights. In offering a "one-stop" approach to GaN-on-Si technologies, its ecosystem includes partnerships with research institutions and a leading automotive-qualified foundry partner.

For media queries, please contact:

Ms. Suchithra Krishnan
suji@igssventures.com