

NanoGram Silicon Ink: Unlocking the Printed Electronics Opportunity

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Presentation

Abstract: NanoGram is a world leader in manufacturing complex nanomaterials and high-rate thick film deposition. The company has over 12 years of experience in applying its core technologies to product applications in the fields of batteries, solid state lighting, telecommunications, display films and photovoltaics.

The core, enabling technology is NanoGram's proprietary Laser Pyrolysis process for the production of precision inorganic nanomaterials. NanoGram's Laser Pyrolysis process employs an optically flattened laser beam to enable fabrication of crystalline silicon nanoparticles and films. Laser Pyrolysis produces nanoparticles with precise control over particle size and size distribution, crystallinity and dopant element distribution.

This process was first invented in 1996 and used to create nanoscale battery electrode materials (NanoGram Devices spin-out, now Greatbatch Technologies) and further adapted in 1999 for the manufacturing of thick films of precision glass for optical telecommunications (NeoPhotonics spin-out). NanoGram has adapted this technology over the past four years to develop silicon inks and deposited films for FPD and PV applications.

The use of NanoGram Silicon inks dramatically reduces the number of manufacturing steps needed to produce FPD Thin Film Transistors (TFT) and PV panels. As a result, the total amount of both capital expense and energy required to manufacture electronics by NanoGram's process is much lower than the conventional subtractive process.

NanoGram inventors have filed over 100 utility patent applications with the USPTO and have 56 issued US Patents. NanoGram employs more than 60 people at its Milpitas, California facility. Over half of the employees hold advanced technical degrees.