

News Release



Local SME supports fellow Singaporean Researcher who pioneered the first commercial single-step writing tools for the fabrication of sub-micron 3D Nano devices

Singapore, Monday, 15 September 2008 – 3V Holdings - a Singaporean company has helped nurtured a fellow Singaporean researcher by volunteering its vicinities and technical support to enable the company to successfully develop the first commercial system able to fabricate arbitrary sub-micron 3D structures in a single step.

Zugo Photonics and Ilios Systems; two subsidiaries of 3V Holdings, have provided strategic and technical support to the startup company Helios Applied Systems. Commonly dominated by foreign MNCs and publicly funded research institutes, this Singaporean trio has initiated a new trend in the technology industry as they complement one another in their area of expertise. Contrary to the common belief that successful applications must somewhat be related to dominant players with deep pockets, the trio has proven that local collaboration with conservative funding can also make great breakthroughs in the scientific arena.

“Dr Kan is very dynamic and visionary,” said Mr Sunny Tan, Managing Director of 3V Holdings. “His work has high technical demands and we can provide a platform to assist him as we are very much involved in high-tech applications.”

The brain-child of Helios Applied Systems, HAS1000 system, uses Two-Photon Lithography technology to focus the laser beam onto a volume of bio-compatible MPP1000 photopolymer to initiate polymerization via two-photon absorption. After illumination, the arbitrary sub-micron 3D device will be washed to remove the non-illuminated region and the polymerized material remains.

Accordingly to Dr Kan Shyi Heng, the brain and pillar behind HAS1000 and Helios Applied System, this new system is a great boost to the Tissue Engineering, MEMS and Photonics industries as it can resolve many of the current problems faced by these industries and it is the only writing tool available for industrial uses that fabricates 3D devices in the sub-micron level. This technology, being the subject of interest for many research institutes and industries, has already had its fair share of enquires from eager customers from Japan and USA.

The uniqueness of the devices fabricated by the HAS1000 system lies in its structure, size and process. Firstly, the system is able to fabricate three dimensional structures. Current technologies, other than in a lab-based condition, allow only the fabrication of two dimensional polymers. The advantage of being 3D is apparent in the tissue engineering industry. For years, biologists and bio-engineers have been trying to mimic natural environment to study and understand cell-cell interactions, but due to the lack of a

suitable 3D platform, the cell properties may be misconstrued. Also, high resolution, something extremely difficult to achieve for a 3D structure in the Nano-scale, can also be achieved by two-photon lithography whose product resolution is much higher than any other known technology.

Secondly, the system is capable of fabricating devices in the Nano-level, with current devices ranging from 100nm to 300nm. This places the system in an advantageous position as researchers and industrialists are exploring exciting possibilities in the Nano-tech playing field and the tool has definitely helped opened up more opportunities in these areas. The HAS1000 supports stages of varying sizes to accommodate different substrates and modifications or special requirements may also be entertained by Helios depending on the applications.

Lastly, the key beauty of the system lies in its simplicity. Conventional MEMS and Silicon Micro fabrication technologies requires tedious processes involving the design of each and every layer of the device, fabricating masks for the layers and finally depositing or removing materials from each layer. These cumbersome processes have caused great inefficiencies and are very time-consuming. Through this single step tool, it is then possible to eliminate the thirty over steps required compared to the fabrication done in a Silicon Wafer Fabrication plant.

To illustrate how simple the tool process is – The user inputs the CAD drawing into the software and the computer does a stereo lithography scanning to determine parameters like Laser Intensity, Laser Power, Motion Control Interface and Array function Interface. Once done, the system will automatically illuminate the photo-sensitive polymer and produce arbitrary true 3D devices. Far exceeding industry's standards, the entire process takes less than a day from the input of the design to the actual delivery of the devices as compared to the average one to two weeks.

The system is also able to fabricate on a variety of substrate like GaN film on sapphire substrate, glass, silicon and MPP1000, a new biocompatible material certified within the FDA approved level of biocompatibility. On top of that, the system can also be applied to industries like Tissue Engineering, Photonics, MEMs/NEMS and Optical Component Device, with potential applications in Rapid Prototyping, Photo Lithography, Photomask and Photoresist.

A former A-Star Research scientist, Dr Kan confessed what drove him into starting a technological systems company is the joy of seeing his ideas get translated into useful commercial applications. As his expertise lies in research, he needed strategic and technical support to build and distribute the product into the commercial market.

His choice of partners is obvious - Ilios Systems is a Laser Solution Provider and Zugo Photonics is a leader in the distribution of Lasers and Photonics products in the region. Currently, Ilios Systems houses and extends their labs and research facilities to Helios for their applications. Zugo Photonics, with established distribution networks in various cities across Asia, serves as an ideal platform for the distribution of the product.

About Zugo Photonics Pte Ltd

Established in 1994, Zugo Photonics is the premier regional distributor in Asia, specializing in photonics, industrial and scientific laser systems, and fiber optics components for telecommunications, optical networking solutions, infrared camera systems, and devices for semiconductor manufacturers. We distribute major brands that are reputable global market leaders in their respective fields. These names include Newport Corporation, Lambda Physik, Nutfield Technology, DRS & Data Imaging Systems and many others.

www.zugophotonics.com

About Ilios Systems Pte Ltd

Headquartered in Singapore, Ilios is an expert designer, developer and provider of laser systems and applications – purpose built to your organisation’s unique requirements. Whether you’re a system integrator incorporating laser engines into your machines; a handler manufacturer building on your laser applications; or a company looking to enhance your existing production processes with lasers, Ilios’ proven capabilities and expertise will assist you to achieve your target results.

www.ilios-sys.com

About Helios Applied Systems

A startup company incorporated in 2008, Helios Applied Systems is the pioneer solutions provider for 3D nanofabrication. Our HAS1000™ is a single beam “scan and step” tool that is able to fabricate arbitrary 3D polymer structure that has sub-micron resolution. To complement the tool, Helios offers a biocompatible grade photopolymer MPP1000™. The company is headquartered in Singapore and is in partnership with Zugo Photonics and Ilios Systems.

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