



Inseto (UK) Limited  
Unit 25, Focus Way  
Andover  
SP10 5NY  
United Kingdom

## PRESS RELEASE

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### *University of Warwick Turns to Inseto for Probe Station to Evaluate ‘Next Generation’ Silicon Carbide Power Semiconductors*

**Andover, United Kingdom** – Inseto, a leading technical distributor of equipment and materials, has supplied the University of Warwick with a [SemiProbe PS4L](#) probe system for developing fabrication processes for next generation silicon-carbide (SiC) power semiconductor devices. The PS4L provides an accurate and repeatable means of mechanically interfacing fabricated prototype devices – as die or still on the wafer – with an analyser that can inject thousands of volts and measure hundreds of amps.

Dr Peter Gammon, Associate Professor (Reader) in SiC Power Electronics at the University of Warwick, comments: “We’re involved in a number of projects that are pushing the boundaries of silicon carbide power device research that will hopefully lead to the volume manufacture of device types that can currently only be fabricated in silicon. The PS4L is an invaluable tool in our endeavours as not only can it handle the high power from/to the analyser, but it is semi-automated, allowing us to collect a large amount of data from highly repeatable tests.”

Dr Gammon goes on say that most commercially available SiC power devices are unipolar structures, such as diodes and MOSFETs, which are well established and commercially available with high voltage ratings.

“We’re looking beyond these though, at bipolar devices that include IGBTs and thyristors because they will further enable highly efficient and ultra-high voltage applications, such as traction inverters and high voltage direct current in a low carbon society,” says Dr Gammon. “For example, silicon IGBTs are typically rated up to

about 2,000V. As part of our work with the EPSRC Centre for Power Electronics, we are today producing silicon carbide IGBTs rated to 10,000V, with scope to go to 30,000V in the future.”

The PS4L is enabling Dr Gammon’s team to apply voltages of up to 10,000V and measure currents of up to 100A to confirm the performance and breakdown voltages of their devices. He says: “While we’re heading towards the production of IGBT and MOSFET switches, we’re able to do much of our work on simple structures such as diodes, in order to evaluate the repeatability of our fabrication processes.”

Following the supply and commissioning of the SemiProbe equipment, a software interface was written by Dr Gammon’s team to enable the PS4L and the high voltage parameter analyser to work together. “Both OEMs were incredibly supportive and gave us access to the source code of their respective products,” notes Dr Gammon.

The equipment is in use at the University of Warwick, one of only a few universities in the UK with SiC fabrication capabilities, and it has already enabled Dr Gammon’s team to capture data from larger test batches than would have otherwise been practical before. Also, there is more confidence in the data collected through automated processing, as it removes the discrepancies of manually obtained data, such as probe tip to pad alignment inconsistencies and variations in contact force.

Dr Gammon, concludes: “Our new equipment represents a real game changer and the support Inseto provided has been exemplary throughout the entire process, from them understanding our requirements through to ensuring the PS4L was fit for purpose now and in the future.”

[Inseto](#) is exclusive distributor for SemiProbe in UK, Ireland and Northern Europe.

**MAIN ENDS**



**Photo caption:** The University of Warwick turned to Inseto for a SemiProbe PS4L probe station to evaluate 'next generation' silicon carbide power semiconductors.

#### Notes to Editors

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#### About Inseto (UK) Limited

Established in 1987 and ISO 9001:2015 Certified since 2005, Inseto is a leading technical distributor of equipment and related materials to the semiconductor, microelectronic & advanced technology sectors, as well as adhesives for electronics, automotive and industrial manufacturing.

The company has three divisions, namely:

- **Equipment Division**, which provides manufacturing equipment for the Microelectronic, Photonic, Electronic, Photovoltaic and Semiconductor industries etc.
- **Consumable Division**, which provides assembly materials and machine consumable items for the Semiconductor, Electronic, Microelectronic, Photonic MEMS and Hybrid assembly industries etc.
- **Adhesive Division**, which provides technically advanced adhesives for bonding, sealing and encapsulation, and which exclusively represents DELO Industrial Adhesives in the UK and Ireland.

Inseto is based in Andover in a high-tech building that houses an adhesives application laboratory, demonstration areas for equipment and instrumentation, and training rooms.

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customer requirements through the application of high standards of quality and customer care (both before and after sales) by continually investing in training and adopting a policy of continuous improvement.

For further information please visit [www.inseto.co.uk](http://www.inseto.co.uk)

#### **About the PEATER Group at the University of Warwick**

Established in 2005, the Power Electronics Applications and Technology in Energy Research (PEATER) group, located in Warwick's **School of Engineering** is the UK's leading research group into silicon carbide (SiC) power electronics. They have an international reputation for research into SiC power devices, with expertise that extends from atoms to systems, covering fundamental materials research, device simulation and optimisation, fabrication, characterisation, packaging and reliability testing. Their unique array of facilities include a dedicated SiC fabrication cleanroom, a SiC CVD system for epitaxial growth, a packaging cleanroom and multiple servers for TCAD modelling.

The PEATER group specialises in taking SiC into new and exciting application spaces. They are working on scaling up the voltage of SiC power devices, working on Schottky and PiN diodes, MOSFETs and IGBTs rated from 3.3 to 10 kV, for applications ranging from HVDC, traction and renewable energy storage and distribution. They are also working to produce the first radiation-hard SiC power devices that will be able to survive in the harsh environment of space, for telecommunication satellites. Meanwhile, the research group continues to work with major international companies on the roll out of existing SiC power solutions, particularly within the automotive sector.

For further information, please visit <https://go.warwick.ac.uk/peater>, or contact Dr Gammon at [p.m.gammon@warwick.ac.uk](mailto:p.m.gammon@warwick.ac.uk)