

# Innovate UK

**Results of Competition: Technology Inspired Innovation Feasibility Studies 2015 - EPES**  
**Competition Code: 1505\_FS\_EPES\_TII**

**Total available funding for this competition was £2.7M from Innovate UK (over all strands)**

**Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.**

<b>Participant organisation names</b>	<b>Project title</b>	<b>Proposed project costs</b>	<b>Proposed project grant</b>
Pragmatic Printing Ltd ARM Ltd University of Bath	COSMOS (COmplementary Semiconductor using thin-film Metal-Oxide Systems)	£149,795	£110,884
<b>Project description - provided by applicants</b>			
Flexible electronics is a key enabler for embedded systems to deliver the Internet-of-Things, where sensors and actuators embedded in physical objects are connected to the Internet. Objects which can both sense their environment and communicate, provide important new data which can be used to respond, e.g. to protect temperature-sensitive goods, report a fault, track goods through supply-chain. One of the key enabling factors for the IoT is the convergence of emerging electronics (flexible, low-cost and simple) with conventional electronics (complex, rigid and expensive). In order to maximise the opportunity for flexible ICs, it is necessary to develop CMOS circuits, which use both n-type and p-type semiconductors. This project will investigate the feasibility of integrating a p-type oxide material into an existing NMOS process, in order to produce CMOS circuits and the viability of manufacturing scale-up. roject Summary			

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<b>Applied Materials Technology Ltd</b> Euriscus Ltd	Low-cost Spatial Beam Combination enabling UV Laser Diode Arrays for Stereolithography	£149,456	£104,619
<b>Project description - provided by applicants</b>			
Additive layer manufacturing (ALM) has revolutionised the near-net-shape fabrication of precision components and advanced cellular and microlattice materials in industries such as aerospace, automotive & medical devices. The laser is the primary component and expense in ALM machines but despite high costs (>£25k), the cost and performance of current laser sources ' particularly for stereolithography ' result in manufacturing costs only supporting prototyping. Applied Materials Technology and Euriscus Ltd seek to address this requirement through a novel enabling laser technology for stereolithography with a radical improvements to the cost, power density, compactness, stability, switching speed, reliability, longevity, tuneability, compactness and electrical efficiency. The step change in the expense, functionality, performance and size of lasers for stereolithography will significantly improve laser scanning speeds, improve part quality and bring opportunities to introduce high speed raster scanning systems to promote ALM as an industrial production technology for novel components and advanced materials. ing Public Project Summary			

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<b>IS-Instruments Ltd</b> University of Southampton	Advanced Raman gas sensing using Microstructured Fibres	£141,428	£111,674
<b>Project description - provided by applicants</b>			
In recent years Raman analysis of samples has become of increasing interest to a variety of sectors. For gas formulations in particular, Raman observation offers greater flexibility and near real time analysis. However the most common implementations of this technique often lack the sensitivity of e.g. Gas Chromatographs or IR absorption spectroscopy, limiting the appeal to industrial applications. In this study we will look to advance the development of Microstructured Optical Fibres to produce a new sensor in which high sensitivity gas phase Raman measurements can be made. This approach will lead to the development of a new compact gas phase Raman sensor with greatly improved sensitivity compared to classical Raman instruments. ject Summary			

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M-Squared Lasers Ltd University of St Andrews	Airy Light Sheet Microscopy for Neurological Imaging	£150,000	£118,500
<b>Project description - provided by applicants</b>			
Awaiting PublSince the invention of the microscope and observation of the first biological cell in 1665, our understanding of biology has been rapidly advanced through photonics-centred imaging and detection. World-leading photonics groups in the UK have uncovered a series of significant technical advances that will enable the comprehensive imaging and detection of a range of molecular biological systems with unprecedented resolution. These advances in biophotonics are set to transform the future of healthcare and improve everyone's life by helping us to understand the world better and move from a treatment to a prevention based healthcare system. These advances will mark a global revolution in the next decades that will drive trillion \$ markets. Working closely with one of the globally leading UK Universities, M Squared has recently acquired intellectual property (IP) that will be transformational in the deployment of biomedical imaging, making it available to a wider range of customers and markets and taking part in driving the healthcare revolution. ic Project Summary			

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Martec of Whitwell Ltd University of Nottingham Loughborough University	Self Optimising CIP (Clean in Place)	£143,573	£113,078
<b>Project description - provided by applicants</b>			
Cleaning of production lines is one of the most time consuming and costly stages of food and drink manufacturing. Cleaning is also one of the most inefficient stages as Clean in Place (CIP) systems are designed and commissioned for the worst case scenario. This is the food materials and operating conditions which are known to foul the equipment the most. In daily use this often results in the over cleaning of the production lines coming at a great expense to food manufacturers. This is primarily due to unnecessary line downtime and resource utilisation. This feasibility project will develop a small lab scale experimental rig and assess the potential of different online sensors and artificial intelligence to quantify the level of internal fouling and autonomously optimise the CIP process in real time. This technology will dramatically reduce the time, cost and environmental impact required for cleaning. blic Project Summary			

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<b>Greentech Automation Ltd</b> RJM Corporation (EC) Ltd	Advanced Burner Flame Monitoring through Digital Imaging	£149,050	£99,363
<b>Project description - provided by applicants</b>			
The variations in fuel ingredients (biomass, biofuel and coals) with fluctuations in power demand impose risks and difficulties for emission control in the power generation and related industries. This project aims to demonstrate a digital imaging based flame monitoring technology that can alleviate these impacts. The project has two main objectives: (1) To develop a prototype of the advanced flame monitoring system; (2) To assess the efficacy and operability of the system on full-scale power stations for emission reduction and efficiency improvement. Whilst laboratory versions of the systems have been tested previously, this will be the first time the outputs from such systems are used to optimise burner and boiler settings in real time on a full-scale power station and will thus be a world first. This technology-inspired innovation feasibility study will be undertaken jointly by GreenTech Automation Limited and RJM International. Demonstration trials will be conducted on power stations in the UK. Public Project Summary			

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