

ASX Code: PSY

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PANORAMA EXPANDS ITS REVOLUTIONARY MEMS SENSOR PRODUCT PORTFOLIO

Global Licensing Agreement Signed with UWA for Patented Spectroscopy Technology

Highlights

- Panorama Synergy (**PSY**) has entered into an exclusive global licensing agreement with the University of Western Australian (**UWA**) for its patented, market leading and revolutionary MEMS-based optical spectrometer technology.
- This agreement is aligned to PSY's strategy to continue to expand its range of sensor technologies and products and opens up significant opportunity across a rapidly growing market – the Internet of Things (**IoT**).
- This agreement is yet another validation of the strength of the Company's partnership with UWA's world leading Microelectronics Research Group (**MRG**) and of PSY's technical and commercial expertise.
- Optical, including Near-Infrared (NIR) spectroscopy is an established technology which measures changes in the colour (wavelength) content of light after interacting with samples. This technology is widely used in agricultural, military, pharmaceuticals, and a variety of other markets.

Panorama Synergy Limited (ASX:**PSY**) ("**Panorama**"; "**Company**") is pleased to announce that it has entered into an exclusive global licensing agreement with The University of Western Australia (**UWA**) for its patented and market leading MEMS-based optical spectroscopy sensor technology. This agreement is aligned with PSY's strategy to build a portfolio of proprietary technology through expanding and extending into related technology specialisations.

The UWA MEMS microspectrometer technology represents a very large investment of time and effort by the UWA Microelectronics Research Group over the last decade. The technology is the result of over \$10M R&D funding from various organizations including the Australian Research Council, the Grains Research and Development Corporation, and various US and Australian defence agencies. This technology was in part made possible by access to world-class fabrication facilities and expertise at the WA node of the Australian National Fabrication Facility (ANFF).

PSY will pay \$330,000 for the exclusive global licensing rights for MEMS-based optical spectrometer, half of which is payable within 30 days of the date of the agreement and the balance in 12 months. Additionally, PSY will pay royalties to UWA under the contract on sales and sub-licensing fees. The Royalty rates are to be agreed with UWA. PSY is also responsible for maintaining and protecting the patents during the term of the license agreement.

PSY will have an exclusive license for the life of the patents, with the right to extend, and first rights over the one application not currently covered by the contract at the end of current obligations in that space. A call option is granted to PSY to acquire the patents for no further consideration.

This agreement is yet another validation of the strength of the Company's partnership with UWA's world leading research group, MRG. MRG has more than a decade of research excellence in MEMS and other sensor technologies, including Spectroscopy. PSY continues to work closely with MRG in bringing sensor technologies to market.

Professor Lorenzo Faraone, Head of MRG at UWA, commented:

"We rarely consider ownership transfer to commercial partners, however, PSY have demonstrated a commitment to MEMS technology and have a clear strategy to commercialise the spectroscopy technology. PSY are an excellent collaborative partner and this is evident from the progress towards commercial outcomes for the LumiMEMS Reader."

What is Spectroscopy and PSY's technology?

Optical, including Near Infrared, Spectroscopy examines the colour (wavelength) content of light to assess the composition of a sample that the light has interacted with. Like the LumiMEMS™ Reader technology, the core optical microspectrometer technology is a subsector of the sensor market.

Optical NIR spectroscopy makes up 63% of the spectroscopy market, given this technology possesses major advantages relative to other methods. It is cost effective, fast and allows for easy sample preparation (no pre-treatments necessary which means it can be done in an efficient, non-destructive manner using a single spectrum range).

The microspectrometer is analogous to the LumiMEMS™ Reader because both are based on MEMS technology, resulting in significant competitive advantages over existing technologies including:

- Substantially smaller
- Lower power needs
- More robust
- More cost efficient
- Potential for much greater scale deployment in the field
- Multi-patented technology

Spectroscopy is an already established, market comprising devices that are often delicate, large, expensive and require high maintenance. UWA has established itself in the MEMS arena by demonstration of this new class of spectrometer. Existing products in the market are often similar in size to a microwave oven and can cost \$100,000. This new technology from MRG and Panorama Synergy is small enough to fit in the camera of an average smart phone at a fraction of the cost.

Common applications for Optical NIR Spectroscopy include:

- **Military and defence:** examples include threat monitoring and target identification
- **Food and agriculture:** examples include food quality testing, soil quality measurement, measurement of protein and moisture in grains
- **Healthcare:** examples include drug content testing in formulations and mixtures, raw materials testing, product quality control, new processes and mechanisms in drug delivery and drug release
- **Oil and gas:** examples include characterisation of oil shales, petroleum market and octane monitoring
- **Chemical industry:** examples include detecting hazardous chemicals such as explosives
- The MEMS microspectrometer is of small format requiring low power, has low weight and size, is robust, and allows it to be deployed in a variety of platforms, such as in drones, intelligent buildings, smart phones and other equipment carried by a person

Diagram 1: Professor Dilusha Silva, from UWA, shows prototype of PSY/UWA spectrometer solution



Market Opportunity

With growing interest in the MEMS based Sensor market, the Company is confident in its ability to become a leading player in the sensor market.

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About Panorama Synergy

Panorama Synergy is a Perth-based technology company focused on the commercial and technological advancement of its LumiMEMS™ optical readout system and the optical micro-spectrometer technology.

These unique technologies have been pioneered by the Microelectronics Research Group (MRG) team at UWA,. MRG took the far-sighted decision to be a global Centre of Excellence in MEMS over a decade ago, creating the opportunity for these breakthroughs. UWA and Panorama Synergy have been partnering in research activities over for much of this time.

Panorama Synergy's Board includes Aidan Montague, Chairman, whose background includes senior roles with Cisco Systems in Europe, South Africa and Asia and Terry Walsh, Managing Director, formerly MD for Cisco Australia and New Zealand, and then CEO of Cisco Canada.

Website: www.panoramasynergy.com.au

About MEMS

MicroElectroMechanical Systems (MEMS) are very small mechanisms that move in response to an electrical signal. Due to their size, MEMS devices can be fashioned into highly sensitive devices able to detect and measure chemical and biologic substances, movement and acceleration, gravity and a wide range of other applications. MEMS technology represents a \$14 billion to \$20 billion industry with significant growth rates. All devices which incorporate MEMS sensors require a readout system to assess and communicate the data that is measured.

The LumiMEMS™ Reader sensor is the next evolution of that readout system, as it takes MEMS readouts from primarily being electrically based, into the world of optical.

MEMS Flipboard: <https://flipboard.com/section/mems-bQ>.