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Regulatory Release
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ASX CODE : SOR

SOR Battery Ink Electrical Charge From Moisture Up 150%

Western Australia, January 25th, 2022 - Strategic Elements Ltd (ASX: SOR) is pleased to report on Battery Ink cells that generate electricity directly from their interaction with moisture. The technology is developed by Australian Advanced Materials (100%) and the University of New South Wales.

In a significant achievement prototype **Battery Ink** cells were screen printed onto flexible plastic and successfully generated over **250mAh** (milliamp hours) of electrical charge solely from moisture. In addition, over **5mA** (milliamps) of electrical current was achieved under load over a 3-day testing period. The outstanding results detail a 150% increase in electrical charge compared to previous reporting September 29th, 2021.

It is envisaged that **one of** the first electronic devices to be powered by the Battery Ink cells will be electronic skin patches that monitor health, well-being, sports performance, etc... Printed/flexible electronics are extremely well suited to wearable skin patches due to their low weight, flexibility/conformality, and potential for high-throughput, low-cost manufacturing of these disposable items.

These devices have lower power requirements but still have a very large existing market that is growing rapidly. Most electrical current needs are lower **(0.5mA – 5mA**) less capacity is needed (< **220mAh**) and duration needs are shorter (**7-14 days**) than for other electronic devices. Notwithstanding this, electronic skin patch annual revenues in 2021 were over USD 10 billion with USD 30 billion forecast by 2031.

Managing Director Charles Murphy said "Traditionally the electrical charge produced by emerging battery technologies only increases by small, incremental amounts each year. To achieve a 150% increase and generate 250mAh of electrical charge solely from moisture so early in development is an exceptional outcome for both the team and the Company. The Battery Ink technology is at an exciting stage of development where fundamental limits of aspects such as battery cell size, power output, duration, energy density, etc… are still unknown. One of the challenges with printed electronics is that the processes are so new that trial-and-error and testing is critical to success. Fortunately, this does also provide significant opportunities for unforeseen breakthroughs".

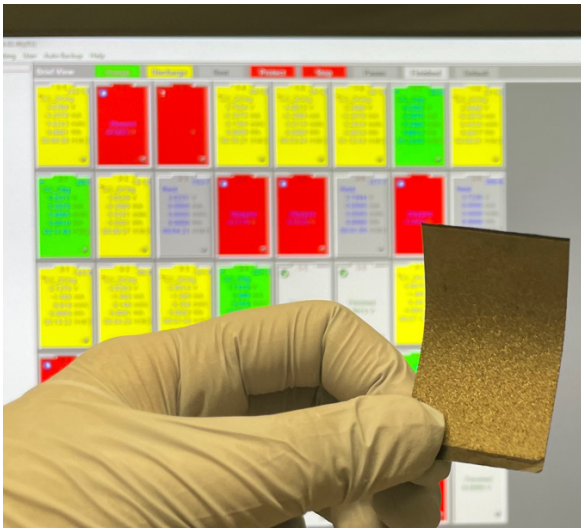
Battery Ink Cell Structure
In solar cells or batteries two electrodes (top and bottom) are needed to collect current (mobile ions). Which then will move from an area of high concentration of ions to low concentration of ions, creating electron current flow (i.e. electricity). These electrodes are connected to loads such as sensors or other electronic components that need power.

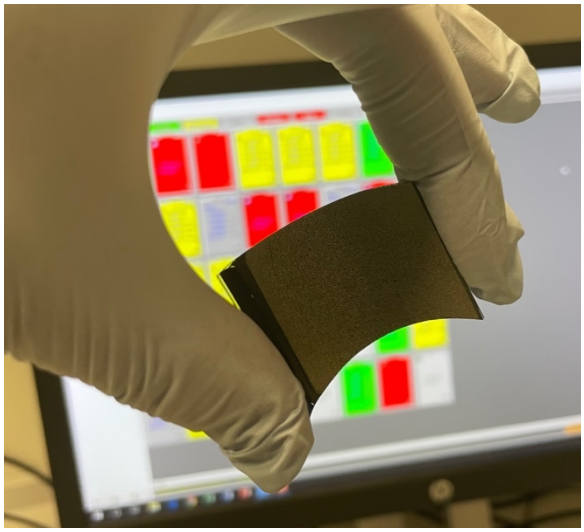
An important aspect of the latest prototype is that the electrodes used in the Battery Ink cell structure were also screen printed. An electrode ink was optimised at UNSW for use with prototype Battery Ink cells and screen-printed directly on top of screen-printed Battery Ink cells for the first time. Ultraviolet photoelectron spectroscopy (UPS) experiments show potential for significant electrical power output. Expanded investigation of attributes such as adhesion properties, screen printability and permeability will be conducted.

Next Steps
Screen printing is the optimum method to produce printable electronics due to greater precision and ability to create more sophisticated devices. Equipment at UNSW has the capacity to screen print features as small as **100 micrometres** and as **large as a 1m x 3m**. Electronic skin patches remain the immediate focus for **Q1, 2022** although investigation into **other** uses of the Battery Ink technology have **commenced**.

Development conducted in Q4 2021 resulted in significant technical breakthroughs that have been covered by patent application. **For the remainder of Q1, 2022** AAM has committed to providing the technical team with freedom to pursue deep research and development and trial-and-error materials engineering with the aspiration of achieving a further **step change** in moisture induced electrical energy generated from the Battery Ink.

1 https://www.idtechex.com/en/research-report/electronic-skin-patches-2021-2031/821





Printed Moisture Power
Traditional battery technologies reduce the freedom of design for new electronic devices. The Battery Ink technology is being designed to be a simple sandwiched architecture consisting of a top and bottom electrode with a functionalised material enclosed between. With this simple architecture, the Battery Ink cells can be printed in a variety of different shapes and sizes potentially enabling the technology to fit new electronic devices with different flexibility, size and shape requirements.

Screen printed graphene-oxide based cells that harvest energy from airborne water molecules could potentially directly power a device, compliment a battery to extend device life or provide energy for battery storage. These different use cases provide alternative commercialisation and partnering options for the Company. Potential benefits include:

- Self-charging through ambient moisture mechanisms
- Environmentally friendly
- Non-flammable
- Low cost
- Attractive and flexible form factor
- Ease of production and integration
- Facilitates widespread development of non-conventional electronic devices

About the UNSW Collaboration
Development is under an Australian Research Council part-funded collaboration between the Company and the University of New South Wales (announced 30/7/20). The group at UNSW have developed deep experience in electronic inks, energy harvesting and storage over the past 10 years and are applying that in development of the Battery Ink technology. UNSW School of Materials Science and Engineering is ranked #1 in Australia for material science and have a number of partnerships with leading companies such as Boral, Hitachi Chemical, One Steel and many more. UNSW has world-class infrastructure and equipment geared towards advanced materials engineering and fabrication.

About the Company
The Australian Federal Government has registered Strategic Elements as a Pooled Development Fund with a mandate to back Australian innovation. The Company is listed on the ASX under the code “SOR”. The Company operates as a venture builder where it generates high risk-high reward ventures by sourcing teams of leading scientists or innovators. SOR majority funds initial development of each venture whilst remaining open to a strategic investor that could strongly assist commercialisation. Investors in SOR potentially pay no tax on capital gains from selling their SOR shares as the Company operates under the Pooled Development Program. More information on the is available on the Company’s website.

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This announcement was authorised for release by Strategic Elements’ Board of Directors.